ELECTRICAL WEST

PRICE TWENTY-FIVE CENTS PER COPY . . . . . McGRAW-HILL COMPANY OF CALIFORNIA

What Should the Industry do to Increase

Range..Water Heater Business?

Answered on Page 81 of this Issue

APRIL 1937

Yes, Every Range Owner in Edison Territory Can Now Have Electric Hot Water, Too
At Especially LOW COST
IT'S JUST MARVELOUS TO HAVE AND IS SO ECONOMICAL, TOO
1¢ 1¢
...that it is actually
cheap
to heat water with electricity
100,000 WOMEN CAN'T BE WRONG
and MORE PROFITS
150 WOMEN ARE CHANGING TO ELECTRIC COOKERY
HANDS MOVE FASTER
With Better Light
Electric Water Heating INFORMATION
MANAGEMENT IS INTERESTED IN THE PROFITS OF LIGHT

More Ammunition for Electrical Dealers

The Edison Company produced and distributed more than 4,000,000 pieces of direct mail literature last year. Home owners, farmers, commercial and industrial users, municipal officials — wherever electricity is used or can be used, Edison literature is doing a consistent educational job. It provides a supplemental background for aggressive personal selling, thus preparing prospects favorably and conserving the salesman's time. No promotion activity of the Edison Company is more important or more productive.

Edison

SOUTHERN CALIFORNIA EDISON COMPANY LTD.

4-37

ELECTRICAL WEST (with which is consolidated The Journal of Electricity), April, 1937, Vol. 78, No. 4. Published monthly by the McGraw-Hill Company of California, 883 Mission St., San Francisco, Calif. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. Additional entry as second class matter at the post office at Los Angeles. Printed in U. S. A. Subscription rate in U. S. and U. S. possessions, and Canada, $2 per year; all other countries $3 gold (thirteen shilling). Single copy, 25c.
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ELECTRICAL WEST

WITH WHICH ARE CONSOLIDATED THE "ELECTRICAL JOURNAL," THE "JOURNAL OF ELECTRICITY, POWER & GAS," AND THE "JOURNAL OF ELECTRICITY"

ESTABLISHED 1887

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C. W. Leihy, Engineering Editor
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Volume 78 Number 4

RANGE AND WATER HEATER SURVEY

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●

LOW COST home cooling will be sought this summer by many in the rural regions who cannot afford full air-conditioning. On page 44, is a discussion of how this need may be converted to profitable load.

●

DISTRIBUTION transformer loading, developing lower cost distribution systems, and electrical heating of homes in the Northwest, are the subjects of reports by the Engineering and Operation Section, Northwest Electric Light & Power Assn., beginning page 35.

COMING-OUT PARTY for home appliances. That's what San Diegans call their drive to teach homekeepers what their appliances are capable of doing for them. Page 51.

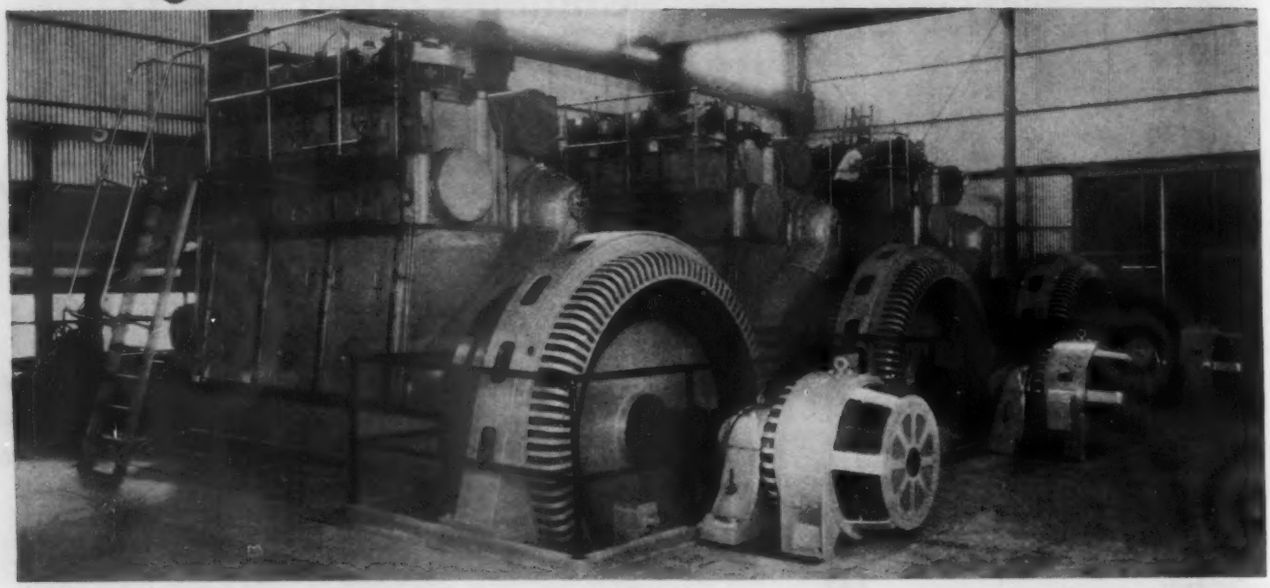
●

WIRING can at last turn to an accepted standard for design. Eight national associations, representing every interest, have collaborated to produce the handbook described on page 96.

●

RANGE AND WATER HEATER saturation and annual consumption for 95% of all western homes is on page 62.

Protective
LUBRICATION FOR YOUR DIESELS



Above is a view of the Brawley power plant of the Imperial Irrigation District, Imperial, California. This plant is 100% Texaco lubricated.

HAND in hand with the development of Diesel power, The Texas Company has perfected lubricants especially adapted to increase the efficiency and prolong the life of Diesel power plants.

Texaco Ursa and Algol provide *protective lubrication* for Diesel cylinders and bearings. Texaco lubrication is positive—uniform—*dependable*. You can't *afford* the loss of compression or the danger of ring wear that inevitably comes with inferior Diesel lubricants.

Specify Texaco Ursa and Algol for your Diesels. They will pay their way in safe, economical, *protective lubrication*.

THE TEXAS COMPANY • A CALIFORNIA CORPORATION • 929 SO. BROADWAY, LOS ANGELES

Texaco Ursa and Algol are superior diesel lubricants, because:

1. **They are refined to stand *hard* service.**
2. **They tend to *repel dilution*.**
3. **They provide *durable film* between wearing surfaces.**
4. **They leave a minimum amount of carbon, which is *light* and *easily removable*.**
5. **They are *adhesive* to wearing surfaces.**

TEXACO LUBRICANTS FOR ALL TYPES OF DIESELS

Light Meter findings in commercial and industrial selling pave the way for sales based on facts.

Training emphasizes the effective use of the rough survey layout in one-call sales to store customers.

G-E LIGHTING SALES TRAINING points way to 50% increase in KWH Sales

The commercial and industrial lighting markets are ripe for tremendous development. Based on known markets, known lighting standards, and accomplishments already realized, engineers' estimates show that a 50% increase in any utility's present KWH sales is a conservative goal. In addition, there are big potential sales of modern lighting equipment.

Specialized sales effort is necessary, however, if utilities are to take full advantage of the present situation. Timed for this is General Electric's Lighting Salesmanship Training program, especially prepared by G-E in cooperation with LaSalle Extension University. This training provides commercial and industrial lighting salesmen with specific sales ammunition for making lighting sales in stores, offices, and factories.

This training is loaded with valuable proof of lighting effectiveness based on actual test cases.

OVER 1800 COURSES SOLD TO DATE

Utilities throughout the country have been quick to take advantage of this sales training. More than 1800 courses have been sold to date, and utilities report they have been taking on new men to carry on their industrial and commercial lighting programs.

The cost of the training is so little that one additional commercial kilowatt of active load will furnish sufficient additional annual revenue to pay for the complete training of two men.

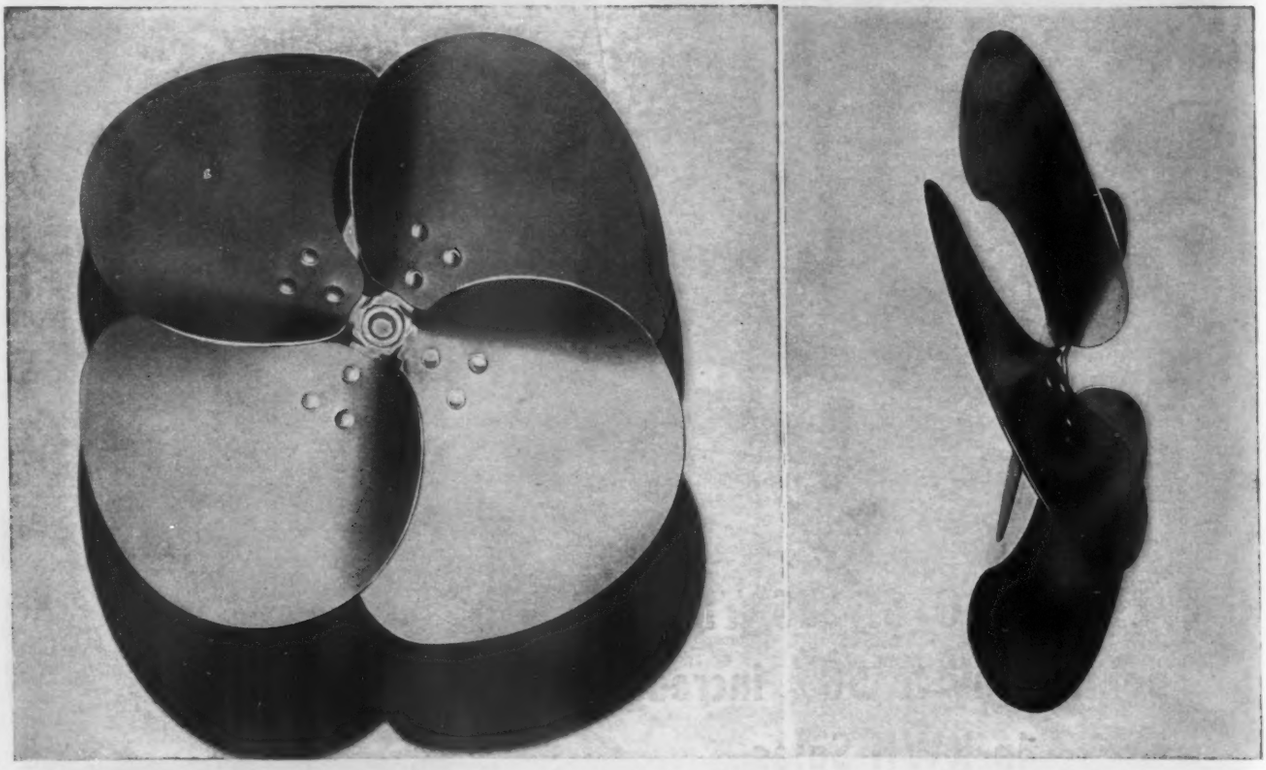
For details, write for a copy of the booklet, "It's Here! It Works! It's Yours", General Electric Company, Dept. 166, Nela Park, Cleveland, O.

GENERAL ELECTRIC

THE G-E LIGHT METER

The G-E Light Meter plays an important part in successful commercial and industrial lighting sales. For quickly measuring the amount of light, this new scientific instrument is invaluable. Costs only $11.50.

THESE BLADES MADE FAN HISTORY!



THE AMAZING G-E QUIET BLADES

HISTORY

1931 — Announced by G-E engineers after years of development and research in General Electric's famous "House of Magic."

1932 — Outstanding performance proved by exhaustive laboratory tests and countless commercial applications.

1933 — Introduced to the trade . . . by General Electric . . . as "the greatest advance in fan blade design in more than 40 years."

1934 — Acclaimed by the trade and public alike for efficient and QUIET operation.

1935 — Dealer sales of G-E Quiet Fans soared upward.

1936 — Dealer sales of G-E Quiet Fans reached new highs.

1937 — THE MOST IMITATED AND COPIED BLADE IN THE FAN INDUSTRY!

MORAL

Sign the G-E Fan Agreement — now — and you, too, will profit by General Electric's vast experience in the development of electric fans.

This experience is the foundation on which new fans are being designed and developed for sale in new markets.

And this experience brings you a better product, better merchandising plans, and bigger profits.

And remember, the liberal G-E guarantee **protects** your profits.

Call your nearest G-E Fan Distributor for the G-E Fan profit story. Do it now!

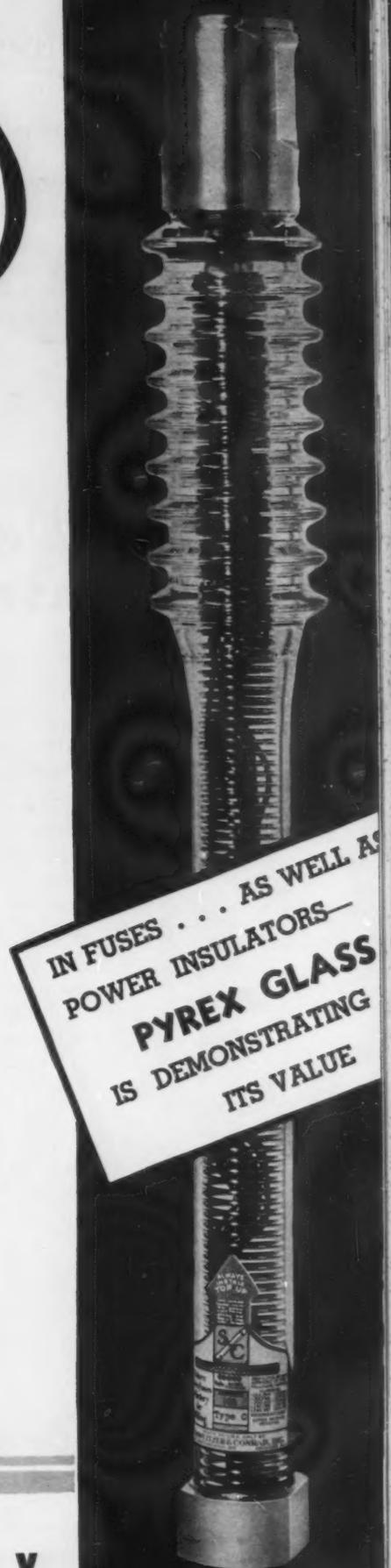
GENERAL ELECTRIC

FANS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONN.

S&C Fuses
ANOTHER INSTANCE OF OUTSTANDING PROGRESS WITH

Pyrex
GLASS



Well known S & C Fuses use PYREX resistant glass because of its high mechanical strength, inherent stability and dielectric value.

The use of PYREX brand glass for high voltage applications is increasing steadily among utilities and electrical manufacturers, and is gaining new friends through its dependable service.

PYREX is a Trade Mark and indicates manufacture by

CORNING GLASS WORKS, CORNING, N. Y.

THESE THINGS CALL FOR A CONSTANT SUPPLY OF CURRENT

POWER CABLE

ASSURE CONTINUOUS SERVICE WITH

DELTABESTON

ASBESTOS-INSULATED CONDUCTORS

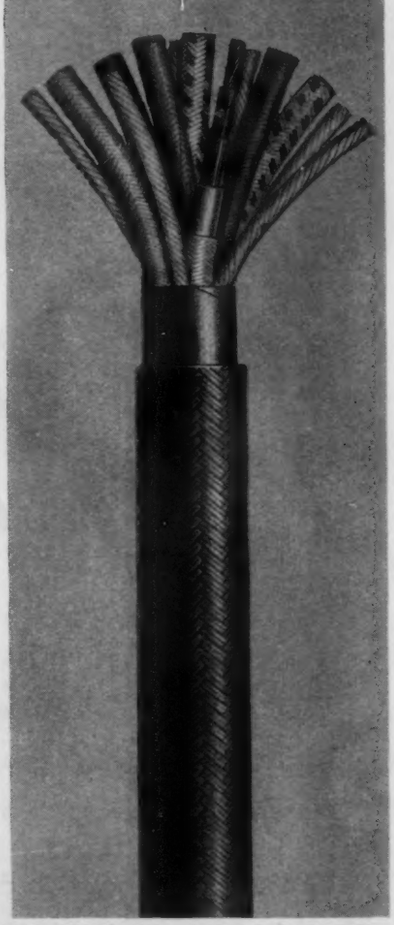
To be really efficient, the power you furnish must be uninterrupted. Hospitals and homes . . . commerce and industry . . . depend upon electricity that never fails.

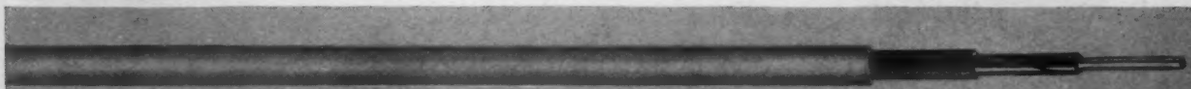
The most probable . . . the most damaging . . . source of failure is fire. You can remove the fire hazard by installing Deltabeston Asbestos-insulated Conductors. New records for lasting operation will be established with this dependable, trouble-free Wire and Cable.

Central Station performance will be improved by the use of Deltabeston Power Cable, Control Cable and Switchboard Wire. Each product in the complete line is insulated with PURIFIED, FELTED ASBESTOS. These exclusive Deltabeston features assure unquestionable service . . . all of the time.

For complete information and samples, write to Section Y-944, Appliance and Merchandise Department, General Electric Company, Bridgeport, Connecticut. Deltabeston Wire and Cable is distributed by General Electric Merchandise Distributors and the Graybar Electric Company.

CONTROL CABLE





SWITCHBOARD WIRE

GENERAL ELECTRIC

DELTABESTON WIRE AND CABLE

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC COMPANY, BRIDGEPORT, CONN.

GREATER RESISTANCE TO IMPACT... another high spot in

TODAY'S TREND TOWARD PYREX POWER INSULATORS

PYREX is a Trade Mark and indicates manufacture by Corning Glass Works, Corning, N. Y.

PRINT IN BINDING

OKOLITE
INSULATION
EFFECTIVELY RESISTANT TO

OKOLITE insulation permits the use of higher voltages —higher loadings. Not requiring a lead sheath, it avoids the wiping of joints, the effects of electrolysis and corrosion, sheath losses, and other disadvantages of lead.

OKOLITE is a high-voltage cable insulation developed upon extensive research—and backed with an impressive performance record. It has the resiliency and other desirable mechanical characteristics of rubber insulation. It is particularly resistant to heat, moisture and corona.

OKOLITE insulation is suitable for many classes of power cable. Its scope runs from a small control wire to a heavy generator lead—or a submarine power cable.

OKOLITE insulation is particularly adaptable for braided cables in wet ducts—or where there are high temperatures.

THE OKONITE COMPANY
Founded 1878
HAZARD INSULATED WIRE WORKS DIVISION
THE OKONITE-CALLENDER CABLE COMPANY, INC.
EXECUTIVE OFFICE: PASSAIC, N. J.
New York Boston Seattle Buffalo Chicago Dallas Detroit Atlanta
Philadelphia Los Angeles Pittsburgh Washington San Francisco
Factories: Passaic, N. J. Wilkes-Barre, Pa. Paterson, N. J.

OKONITE QUALITY CANNOT BE WRITTEN INTO A SPECIFICATION

Chromalox has made Many Friends for Norge Electric Range

"The flat surface of Chromalox Super-Speed Electric Range units convinced us of their practical and efficient method of transferring heat from unit to cooking vessel. Our experience with Chromalox units has since proven the correctness of our first decision and served to emphasize other very desirable features such as long life, high efficiency throughout life of unit, and low operating temperatures which conserve life and appearance of the range. Happily, these units have resulted in better cooked and more delicious foods and have made many friends for Norge Electric Ranges."

Howard E Blood

President, NORGE DIVISION
BORG-WARNER CORPORATION

Specify CHROMALOX Super-Speed RANGE UNITS

in the following ranges:

MARION
NFORD
MONARCH
TE
NORGE
INATOR
QUALITY
UNIVERSAL

BUYERS OF THESE FINE RANGES accept their Chromalox Super-Speed units as *visible evidence* of the determination of the range builder to provide the best the market affords throughout every detail of range construction.

Wise merchants selling these ranges capitalize on this fact, and permit the Chromalox unit to aid in their selling.

They know that this unit and the range it serves, will back up every word they say.

Represented by

MONTGOMERY BROTHERS
911 Western Ave., Seattle, Wash.
1501 N. W. Kearny St., Portland, Ore.
61 Fremont St., San Francisco, Calif.
912 E. 3rd St., Los Angeles, Calif.

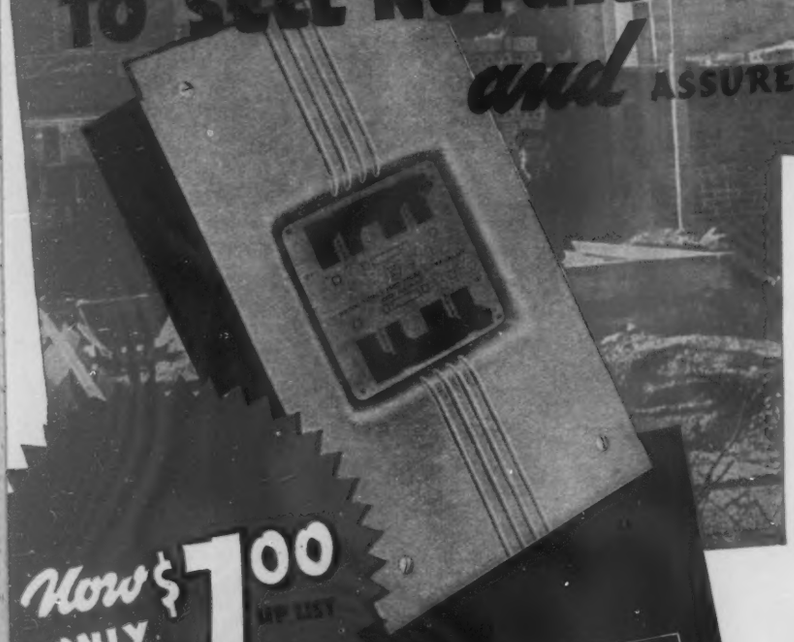
THE PETERSON COMPANY
1921 Blake St., Denver, Colo.

EDWIN L. WIEGAND COMPANY, 7540 Thomas Blvd., Pittsburgh, Pa.

THIS IS THE TIME

TO SELL NOFUZE CIRCUIT PROTECTION

and ASSURE CONTINUED GOOD WILL



Now ONLY $1.00 UP LIST

So easy TO OPERATE . . .

Trip

. . . the wiring system is automatically protected when a short circuit or dangerous overload occurs and until the cause of the overload is removed.

Flip

. . . electric service is instantly restored simply by flipping the breaker handle, first to "OFF" and then to "ON." Nothing to renew or replace.

Before the wiring goes in, do your customers a favor that they will remember for years to come. Sell them the Westinghouse low-cost Nofuze Load Center equipped with "De-ion" circuit breakers. Tell them of its convenience—so simple to operate that even a child can restore service. Tell them about its safety—factory-sealed against tampering. Tell them that Nofuze Circuit Protection *now costs them little if any more* than the conventional switch and fuse combination.

Every Nofuze installation resulting from the power company's recommendation builds and maintains customer good will. No need for fuse replacement—no waiting for the service man.

Every Nofuze installation recommended by the electrical contractor at the new low prices helps him get more wiring jobs. Prospective customers will instantly recognize its convenience, its safety, its attractive appearance.

Write today for Catalog 29-300 containing the amazing new low prices and showing the wide range of available wiring combinations. Westinghouse Elec. & Mfg. Co., Dept. 5-N, E. Pittsburgh, Pa. J 60061

Westinghouse

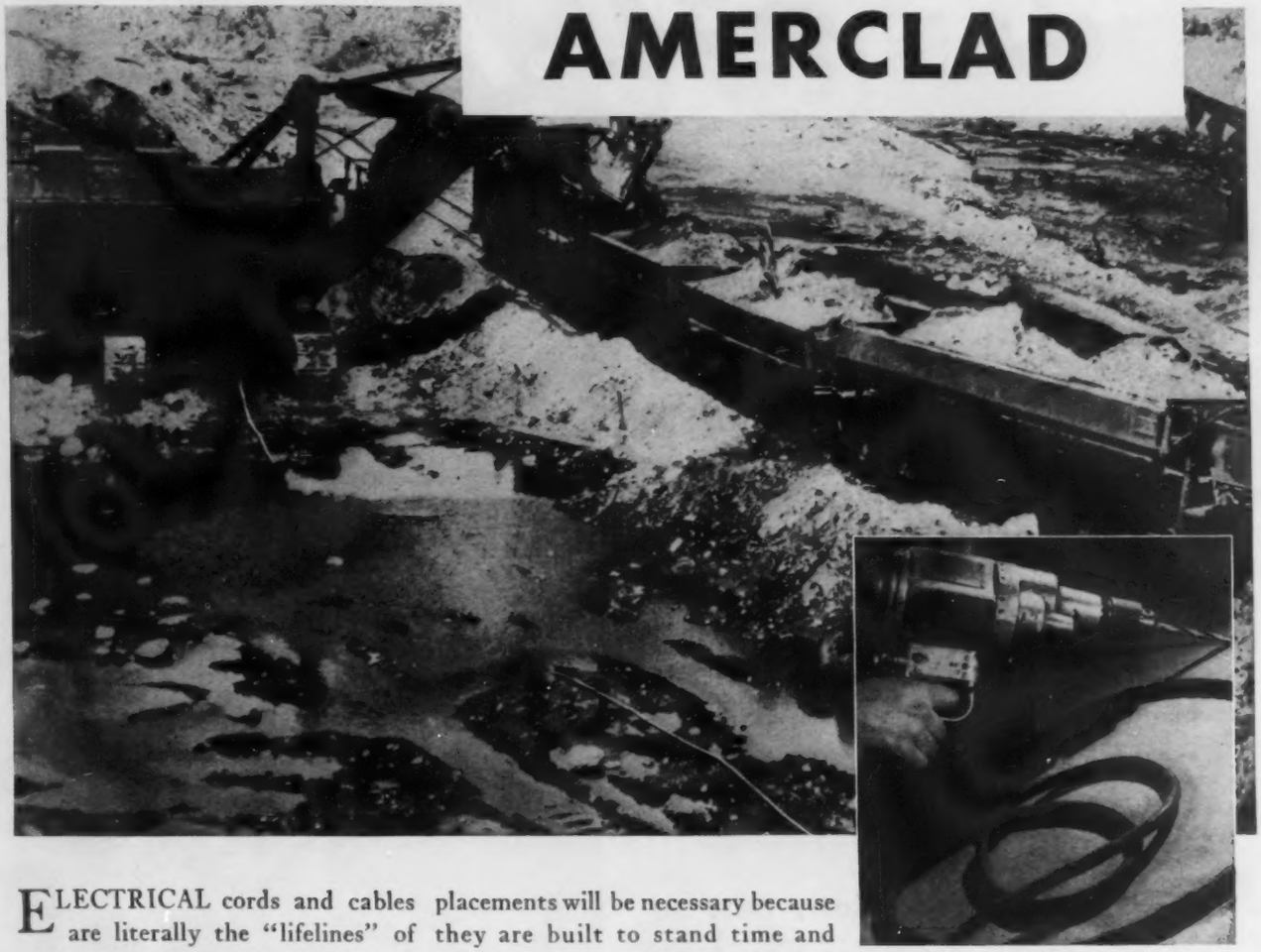
NOFUZE CIRCUIT PROTECTION

Easy TO WIRE

Plenty of knockouts and ample wiring room in this new Load Center. The handy snap-out leaves the entire box available for the wiring job.

The MOST DEPENDABLE *"Lifeline"* from your Power Supply is . . .

AMERCLAD



ELECTRICAL cords and cables are literally the "lifelines" of production. When they fail production stops . . . trouble and costs pile up.

But you can depend upon maximum service if you use Amerclad All-Rubber Cords and Cables. These Cords and Cables have a reputation built upon service. You can count on them to put off the day when replacements will be necessary because they are built to stand time and rough treatment.

Amerclad Cords and Cables consist of one or more conductors encased in a protective sheath of tough, resilient rubber. The rubber is a strong, efficient protection, particularly in portable cables, against water and abrasive wear, and its flexibility makes it possible to move the cords and cables with ease.

No matter what size cords or cables you need, you can get the advantages of Amerclad Construction. For Amerclad Cords and Cables range in size from the largest rubber-sheathed cable in the world to small cords no larger than a lead pencil.

AMERCLAD *All-Rubber* CORDS AND CABLES

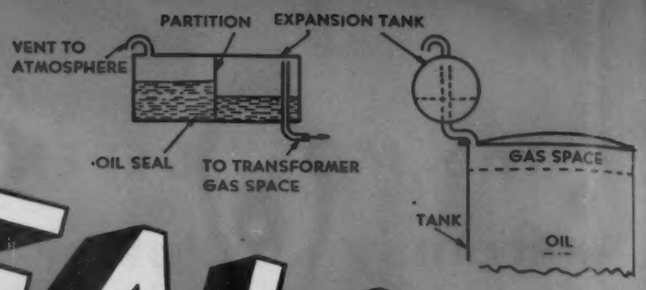
COLUMBIA STEEL COMPANY · *San Francisco*

Pacific Coast Distributors of Electrical Wires and Cables for American Steel & Wire Company

United States Steel Products Company, New York
Export Distributors

UNITED STATES STEEL

OIL-SEALED
INERT GAS PROTECTION
For TRANSFORMERS



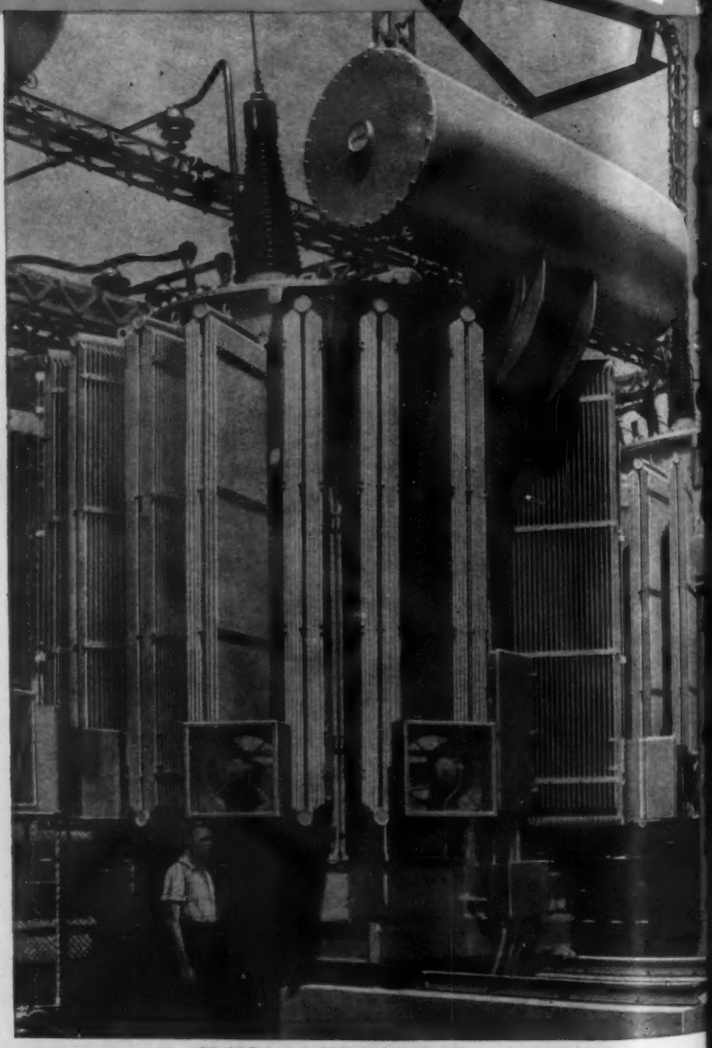
ALLIS-CHALMERS OIL-SEALED Inert Gas Protection for transformers is the only one in commercial use which operates without any material or mechanical devices requiring inspection, adjustment, or replacement after a period of operation. The OIL-SEALED system operates with a pressure deviation from atmospheric which never exceeds one-half to one pound per square inch, depending upon the size of the transformer.

The OIL-SEALED system can be operated either as an inert gas type or as an expansion tank type transformer. There are no moving mechanical parts, nothing to get out of order, and nothing to wear out or require replacement.

Why not enjoy the benefits of OIL-SEALED Inert Gas Protection without paying for high maintenance expense?

Ask the nearest Allis-Chalmers district office for more information about this novel system.

722



26,667 kva, 132,000 volt Transformers

TRANSFORMER DIVISION

ALLIS·CHALMERS

MILWAUKEE WISCONSIN

THERE ARE

Design Features

THAT ASSURE POSITIVE DEPENDABLE PERFORMANCE IN

Protecting rural line transformer on 6900 V. circuit.

The TRIP OUT FUSE SWITCH

Consider these

FEATURES OF OPEN TYPE SWITCHES

SOLDERLESS CON-NEC-TITES (for No. 2 solid) are used for upper and lower line connections.

●

MOUNTING BRACKET—permits the switch to be conveniently adjusted to face the operator.

●

TUBULAR INSULATOR, fog type design—made of plastic wet process porcelain; no cement used.

●

BUTTON HEAD FUSE CAP—makes positive, direct pressure contact with the upper terminal.

●

CARTRIDGE TUBE—is fibre lined, warp-resisting and is made of bakelite.

●

LARGE PULLING EYE—for inserting a switch hook or fuse puller.

●

LIFTING HOOKS—facilitate easy removal and installation of cartridges with a switch stick. . . . Tripping Mechanism—is made of corrosive-resistant material.

●

SNUBBING BLOCK—serves to mechanically relieve the tension on links smaller than 25-ampere size.

SWITCH RATINGS

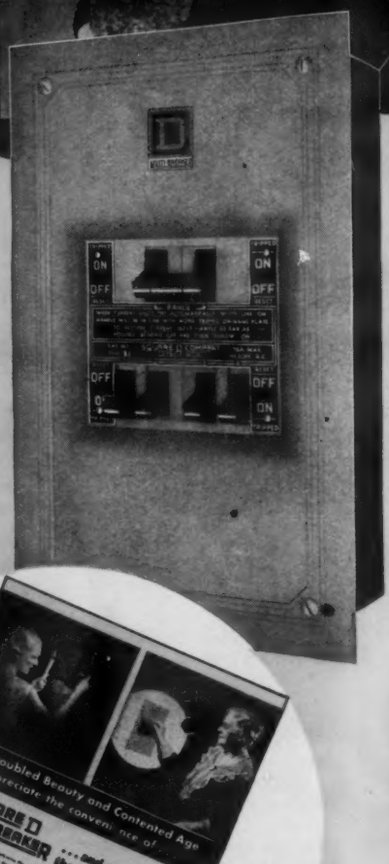
Voltages	Amps.	Cat. No.
5,000	100 OR LESS	6400
7,500/12,500YGrd.		6401
15,000		6402

SOLDERLESS CON-NEC-TITES.
T-CON-NEC-TITES.
LAP-TITE CONNECTORS.
TRIP OUT FUSE SWITCHES.
TRIP-O-LINK FUSE SWITCHES.
TRIP-SAVER FUSE SWITCHES.
ONE AND TWO INSULATOR FUSE AND DISCONNECT SWITCHES.
PORCELAIN HOUSED TRIPOMATIC FUSE CUTOUTS.
DOUBLE DUTY FUSE CUTOUTS.
POLE TOP GANG OPERATED SWITCHES.
PORCELAIN HOUSED DISCONNECT SWITCHES.
N E M A HOOK OPERATED DISCONNECT SWITCHES.
FUSE LINKS.
FUSE LINK BOXES.
FUSE PULLERS.
SECONDARY FUSES.
SCREW ANCHORS.
EXPANSION ANCHORS.
FULL VU GUY GUARDS.
GUY WIRE CLIPS AND STRAND BANDS.
ECONOMY CABLE CLAMPS.
DEAD END SERVICE CLAMPS.
V GROOVE SERVICE CLAMPS.
WATTMETERS.
J HOOKS.
CONDUIT STRAPS.
ABC SLEEVES AND MACHINES.
CABLE RING SADDLES.
FIT RITE WIRE HOLDERS.
SLEEVE TWISTERS.
GROUND WIRE CLIPS.
GROUND CLAMP-TITES.
GROUNDING CABLE.
MILLINE TOOLS AND ACCESSORIES.
CON-NEC-TOP CLAMPS.
GROUNDING SETS.
MASTERENCHES.

KEARNEY PRODUCTS

MAYDWELL AND HARTZELL
INCORPORATED
LOS ANGELES SAN FRANCISCO

The SQUARE D MULTI-BREAKER is increasing sales *and profits* for alert contractors



■ Contractors everywhere are finding that there is a good profit in the Square D Multi-breakeR . . . that it sells easily . . . that people want it . . . that speculative builders and architects find it a sales asset . . . and that it does create wiring jobs.

These contractors know that Square D advertising is creating business for them!

And they know that there is a rapidly expanding market for the Square D Multi-breakeR—one that can be realized upon right now by aggressive sales work on your part.

Follow Square D advertising . . . keep the window display in your windows . . . read these folders which are being sent to you at regular intervals and which tell you of the success of other contractors . . . contact your local utility, the realtors, architects, prospective builders and present home owners who may remodel . . . and you will sell many Square D Multi-breakeRs as well as create wiring jobs.

Square D electrical devices are available through electrical wholesalers everywhere.

Both Troubled Beauty and Contented Age will appreciate the convenience of
the SQUARE D MULTI-BREAKER
. . . and pay more for the home so equipped!

CALL IN A SQUARE D MAN

SQUARE D COMPANY

LOS ANGELES - DETROIT - MILWAUKEE

SQUARE D COMPANY CANADA LTD. TORONTO, ONTARIO

PRINT IN BINDING

Easier-Faster ROASTER SALES

The Complete Line that's developed on ELECTRIC RANGE EXPERIENCE

Westinghouse Roaster sales are *soaring* — principally (we believe) because it is a superlative line and each model wins quick and enthusiastic and VOCAL endorsement by users.

Housewives by the tens-of-thousands are selling these roasters for Westinghouse dealers. Reason? They're designed and built by the men who design and build Westinghouse Ranges. *They're right!*

Westinghouse
DE LUXE
ADJUST-O-MATIC
the original rectangular roaster
with the ONLY multi-purpose Broiler-Grid

BROILS

FREE TRIAL OFFER TO MILLIONS

Retail experience says that four out of five roaster demonstrations result in sales. That's why we're offering a Free Week's Trial in the Westinghouse color pages in American Weekly, This Week and supplementary newspapers.

More than 12¼ million families will be reached—making this the Great Roaster Event of 1937 for all active Westinghouse retailers.

Get the facts PROMPTLY from your Westinghouse representative — this plan is loaded for real action — full profits.

FRIES

STANDARD ADJUST-O-MATIC

Signaling roaster with porcelain inset and aluminum cooking set — 9 quart capacity — wide range temperature control. ROASTS — BAKES — STEWS; cooks complete meal for 6 or more *with oven speed.*

WESTINGHOUSE CASSEROLE

Handsome, two-heat electric casserole. 2 quart capacity, ideal for baked beans, roasts, vegetables, puddings, soups. Better taste and full flavor — the efficient Westinghouse way.

Here's the complete story on the powerful promotional backing Westinghouse gives you to help build BIG roaster sales. Bill inserts, action displays, practical "Ad-Builder" service, complete cooking school manuals. Get it — use it!

Westinghouse RSA-14 Rectangular Roaster and Broiler-Grid combination, complete with Glasbake dishes. *Larger capacity than ever*—16½ quarts.

Also available with aluminum cooking set.

ROASTS · BAKES
STEWS · BROILS
GRILLS · FRIES

Cooks everything deliciously! Signaling Adjust-o-matic heat control.

EVERY HOUSE NEEDS

Westinghouse

THE LINE OF LEAST RESISTANCE

THESE ADS will reach

★ ____ people in YOUR market

It's a good bet that every second adult who visits your store, or passes on your street, is included in this intensive Westinghouse campaign of full-color advertising.

These timely buying messages reach more than 12¼ million families. More than half of *all* the able-to-buy families in the country make up the audience for EACH of these many messages!

Here's the greatest goods-moving force ever placed in support of the electrical retailers' business. But it cannot help YOU unless YOU tie in with it and MAKE IT *YOUR* ADVERTISING.

Get full details from your Westinghouse representative —and *Act Promptly*.

Across page is one of seven smashing full-color ads appearing in American Weekly, This Week and supplementary newspapers — *each* reaching more than 12¼ MILLION families. See list of papers below.

INTENSELY LOCAL *"Buy Now"* ADVERTISING FOR ELECTRICAL DEALERS

Carried regularly by these newspapers:

Akron Times Press
Albany Times-Union
Atlanta American
Atlanta Journal
Baltimore American
Baltimore Sun
Birmingham News Age-Herald
Boston Advertiser
Boston Herald
Buffalo Times
Chicago Daily News
Chicago Herald & Examiner
Chicago Tribune
Cincinnati Enquirer
Cleveland Plain Dealer
Columbus Dispatch
Dallas News
Denver Post
Des Moines Register
Detroit News
Detroit Times
Houston Chronicle
Indianapolis Star
Kansas City Star
Los Angeles Examiner
Louisville Courier-Journal
Memphis Commercial Appeal
Miami Herald
Milwaukee Journal
Milwaukee Sentinel
Minneapolis Journal
New Orleans Item-Tribune
New York American
New York Herald Tribune
Oklahoma City Oklahoman
Omaha Bee-News
Omaha World-Herald
Philadelphia Inquirer
Philadelphia Record
Pittsburgh Press
Pittsburgh Sun-Telegraph
Portland Oregonian
Rochester American
St. Louis Globe-Democrat
St. Paul Pioneer Press
San Antonio Light
San Francisco Examiner
Seattle Post-Intelligencer
Syracuse American
Toledo Blade
Washington Herald
Washington Star

★ **Your Westinghouse representative can tell you *how many* people in YOUR market are reached by these messages.**

Every house needs **Westinghouse**

IT'S 10-YEAR ECONOMY THAT COUNTS!

Low 10-year cost wins U. S. Public Works Administration order for 16,697 Westinghouse Refrigerators

Largest single order of its kind ever reported! 16,697 in one purchase! Six solid miles of Westinghouse Refrigerators! A record breaking order — and record breaking economy won it — for the Public Works Administration Housing Division was seeking the lowest cost for modern, dependable refrigeration in 34 slum clearance and low-rent housing projects.

To pick the most economical electric refrigerator they asked for bids from leading manufacturers, not on price alone, but on initial price PLUS a guaranteed ten-year cost of electricity. Westinghouse won! And if Westinghouse economy can save money on these government projects it can certainly save money for you.

W WESTINGHOUSE ELECTRIC

It's Kitchen Proved in Homes Like Yours

When you ask "How will it perform in MY kitchen?" Westinghouse gives you facts. 89 Proving Kitchens in actual homes, like your own, conducted over 600 tests under actual kitchen conditions. You'll find detailed results of these tests in the Westinghouse FAMILY ALBUM which your Westinghouse dealer will be glad to show you. They are all certified and notarized. And they cover the very points that you want to know when you buy a refrigerator — better food protection, greater convenience, full power, faster freezing, and greater economy. If you want to be SURE of getting a refrigerator that will do more things better at less cost — check the facts in the Westinghouse Refrigerator FAMILY ALBUM. /

Westinghouse COMPLETE ELECTRIC LAUNDRY

Do your family laundry in only a fraction of the time and effort required by old methods.

The Westinghouse Spinner Washer does two operations at once — washes and damp-dries. It's safe, convenient, increases the life of your clothing.

The De luxe Ironer maintains the correct heat for every kind of fabric, irons everything in the basket. Has two speeds — silent enclosed mechanism.

You can have the modern Westinghouse Electric Laundry, complete, or step by step. Ask your Westinghouse dealer, or write direct to Department 7226, Westinghouse Electric and Manufacturing Company, Mansfield, Ohio.

COAST-TO-COAST, USERS REPORT *Less cooking Cost*

Westinghouse Ranges actually cost less to operate, or at least no more, than old-fashioned cooking methods — that's what 9 out of every 10 experienced cooking authorities, that's what Consumers, by unsolicited letters recently reported! Westinghouse is a cool, luxury to run and economical. It offers the added convenience, the labor-saving ease and speed of Kitchen-tested Cookery. It's the added economy and assurance of having your meats and roasts always come out just the way you want them. See the new 1937 Westinghouse Ranges at the nearest Westinghouse retailer's store.

COOK EVERYTHING in the Westinghouse ROASTER with New MULTI-PURPOSE BROILER-GRID

Amazing versatility — everything from hurry-up griddle cakes to a beautifully browned roast or meat or fowl. Cakes, pies, biscuits — complete dinners in endless variety foods are deliciously prepared in this all-purpose cooking device.

Automatic heat control — any temperature from warming heat to quick-searing. Easily portable, needs but 3 feet of space. Broiler-Grid raises without scorching the meat; easily cleaned.

See this convenient, efficient and economical cooking unit at your nearby Westinghouse retailer's.

ROASTS · STEWS · BAKES
BROILS · GRILLS · FRIES

EVERY HOUSE NEEDS **Westinghouse**

W WESTINGHOUSE ELECTRIC

FACTORIES WITHIN A FACTORY

ASK your friends, "What is the Westinghouse Company?" and they probably will answer: "One of the world's largest manufacturers of electrical equipment".

But that is a composite picture. For a perfect understanding of Westinghouse visualize a group of *factories within a factory,* each specializing in the design and manufacture of a few specific products but coordinated and cooperating with all other divisions for best service to the industry.

Each of these Westinghouse divisions is responsible for improving the design and manufacture of its products. Like an independent company, its service to the industry depends upon sales adequate to cover the cost of such service. But because of this close coordination and the experience gained through studying entire power systems, each Westinghouse product is designed for best service in relation to other apparatus.

Whenever you buy a Westinghouse product, you benefit from specialized manufacturing . . . but in addition you gain *one great advantage.* Each Westinghouse manufacturing unit is supported by research, engineering and service facilities made possible only by coordination of resources, and made practical by a diversity of products to which these services can be economically applied.

J 90088

Westinghouse

40% OF LOS ANGELES' ELECTRIC RANGE INSTALLATIONS ARE WOOLWINE

In February, 2 out of every 5 Range Installations on the Los Angeles Bureau of Light & Power Lines were Woolwine Electrics

Six short months ago Woolwine sold their first electric range. Today it is Los Angeles' No. 1 electric range. There is only one answer to this success story—INSTANT PUBLIC ACCEPTANCE, and everything that this implies. Woolwine is the kind of range the public wants, at a price it wants to pay.

The product and the merchandising plan are proven. This success story is now being repeated throughout the West. Because of this amazing sales record and because of the calibre of the dealers behind the product, electric range dealers everywhere are seeking Woolwine franchises. Some territories are still open. Write or wire today. Remember... Woolwine ranges are as easy to sell as they are hard to sell against.

80 Leading Electric Dealers in Southern California Feature Woolwine Ranges

At no other time have so many leading electric appliance merchandisers backed one electric range. In every city throughout the Southland, Woolwine ranges are sold by the most progressive merchandisers. Every one of Los Angeles' leading furniture and department stores features Woolwine. Here they are:

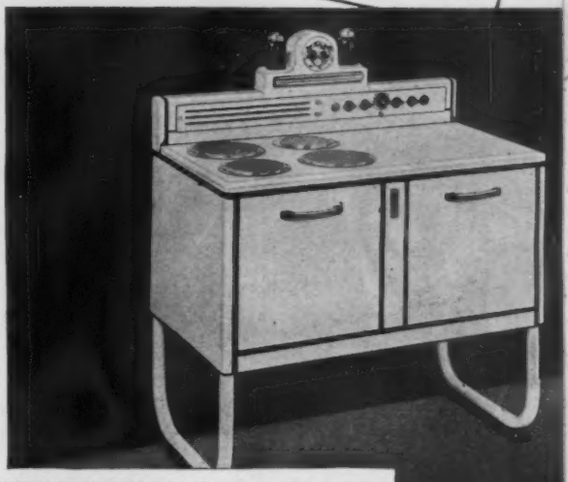
THE MAY COMPANY
THE EASTERN
BARKER BROS.
THE BROADWAY
THE BROADWAY-HOLLYWOOD
LOS ANGELES FURNITURE CO.
J. W. ROBINSON CO.
BULLOCK'S

It's Safe to Follow Their Experience

WHY WOOLWINE?

Woolwine prices have opened a vast new market for electric ranges.
Woolwine brings greater range value to the low price field.
Woolwine pioneers in modern streamline beauty.
Woolwine is designed exclusively for Western homes and Western conditions by domestic engineers.
Woolwine is backed by the most powerful merchandising ever put behind an electric range.
Woolwine has a strict policy of dealer protection.

THE WOOLWINE COMPANY
5119 South Riverside Drive
LOS ANGELES, CALIFORNIA



THE LAGUNA MODEL • A full size complete range with a baking oven, a warming oven, built-in timer clock, four Spede-Screen surface units, condiment set and full porcelain enamel finish.

MALIBU MODEL • Full size complete range, 41" cooking top, four Spede-Grid surface units, a baking oven, a warming oven, three-heat silver contact switches, oven Tele-Tale, full porcelain enamel finish.

This design available in four models with built-in Timer Clocks, Minute Minder, four Spede-Grid surface units, one and two ovens, warming compartment, utility drawer—all are full porcelain enamel finish.

YOUNGSTOWN

BUCKEYE TRADE MARK YOUNGSTOWN CONDUIT

HOT GALVANIZED
ELECTRO GALVANIZED
BLACK ENAMELED
ELECTRICAL METALLIC TUBING

YOUNGSTOWN produces the four types of conduit listed above under conditions of intensive metallurgical control and rigorous inspection which assure uniformity in analysis, ductility and finish. The "workability" of Buckeye Conduit thus maintained enables journeymen to make installations which add to a contractor's reputation for quality workmanship.

★ ★ ★

THE YOUNGSTOWN SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

Sheets; Plates; Pipe and other Tubular Products; Conduit; Tin Plate; Bars; Rods; Wire; Nails; Unions; Tie Plates and Spikes

671

"Conduit in the raw" — molten steel pouring from Bessemer converter

IN 1901, Westinghouse solved the problem of lower-bearing replacements with the invention of the ball and double-jewel bearing. For thirty-five years, this ball bearing has been used in EVERY Westinghouse watthour meter. Not even its style number, 25463, has been changed.

The longer a Westinghouse meter is in service, the more pronounced become the advantages of this bearing. Just two jewels and a ball, but meter test sheets throughout the country definitely prove that they seldom need replacing.

WHY

1 **No form of lubrication is required.**

2 **Rolling contacts between the ball and the two jewels prevent wear—there is no grinding action.**

3 **The action of the ball bearing minimizes jewel breakage caused by jars and vibrations.**

REDUCES MAINTENANCE

Because the ball and double-jewel bearing has almost unlimited life, the time between periodic meter tests need not be restricted by bearing maintenance.

And since this exclusive Westinghouse bearing seldom develops friction, replacement costs are negligible.

Of course, the double-jewel and ball bearing costs more to manufacture, but in no other way can be obtained SUSTAINED ACCURACY and the LOWEST MAINTENANCE COST over long periods of years.

This bearing is just one of those extra values which is expected from Westinghouse . . . *and furnished at no extra cost.*

Ask our meter representative to tell you about the other "extras".

J 40082

Westinghouse

METERS
INSTRUMENTS
RELAYS

SELL
THE NEW NORGE ELECTRIC RANGE

The line of greatest sales appeal is the line of least sales resistance . . . and in electric ranges, it's Norge. Convenience features that convince prospects are found in every model—and regardless of the model a prospect is interested in, you have the same basic *plus values* to sell: Fast, economical operation—better circulation and distribution of oven heat—*all* porcelain construction for *lasting* beauty and easily maintained cleanliness.

Get the details about the valuable Norge franchise. Liberal finance plans make it easy to be a Norge dealer—a powerful, extensive advertising and sales promotion program makes it easy to set sales records. Write or wire today.

NORGE DIVISION *Borg-Warner Corporation,* Detroit, Michigan ER-3

Spill-proof, practically indestructible, Chromalox super-speed cooking units available on all Norge Electric Ranges at extra cost—and extra profit to the dealer.

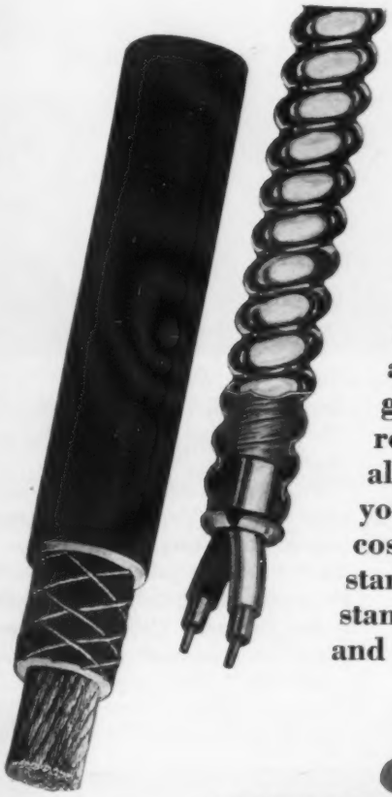
NORGE

Plus Value Home Appliances

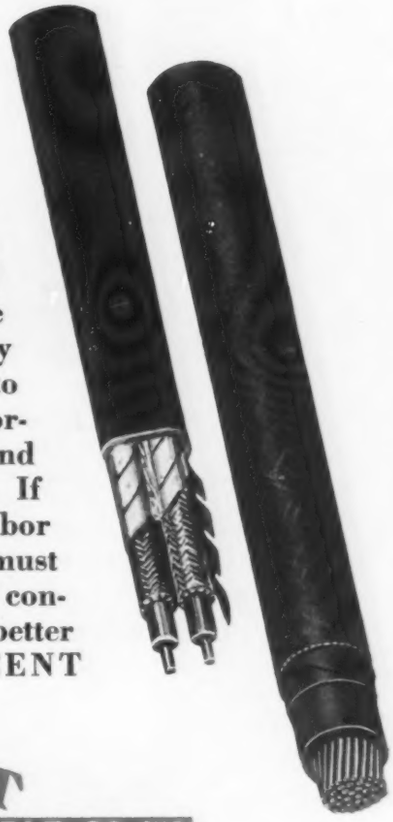
ROLLATOR REFRIGERATION (Domestic and Commercial) • GAS AND ELECTRIC RANGES • WASHERS AND IRONERS • WHIRLATOR OIL BURNERS • GAS BURNERS • FINE-AIR FURNACES • COAL STOKERS • AIR CONDITIONING • CIRCULATOR ROOM HEATERS

VARNISHED CAMBRIC • RUBBER POWER CABLES • BUILDING WIRE • RADIO WIRES • SIGNAL CABLE • FLEXIBLE CORDS • LEAD ENCASED AND PARKWAY CABLES • ARMORED CABLE • CRESFLEX NON-METALLIC SHEATHED CABLE • SERVICE ENTRANCE CABLE • MAGNET WIRE • BARE WIRE

"Boss, you sure took the kinks out of my work when you put CRESCENT INSULATED WIRE and CABLE on the job!"



These fellows on the job will tell you Crescent products are flexible and tough . . . easy to work and bend without surface cracking. Besides, they are drawn accurately to gauge, annealed to the correct degree of softness and always clean and bright. If you want to cut time and labor costs on installations that must stand up under severe and constant use—you'll do it better and quicker with CRESCENT



CRESCENT INSULATED WIRE & CABLE CO. INC.
TRENTON, NEW JERSEY

WESTERN REPRESENTATIVES

LOS ANGELES
Henger-Seltzer Co.
945 E. Pico St.

SAN FRANCISCO
Hodges & Glomb
1264 Folsom St.

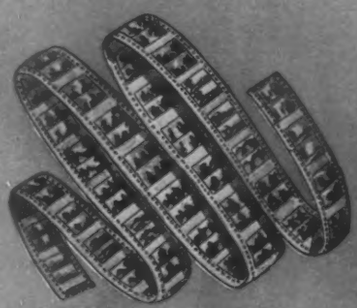
KANSAS CITY, MO.
W. F. Howe,
526 Law Bldg.

CRESCENT ENDURITE SUPER-AGEING INSULATION • WEATHER-PROOF WIRE

Hotpoint Announces

Hotpoint Offers New Sales Helps

Ready April 1, The Skipper Campaign, for April, May and June. Complete with merchandising ideas, new advertising, sales contests, direct mail, window display and outdoor posters. An organized, fast-moving program for your Spring Selling Campaign.

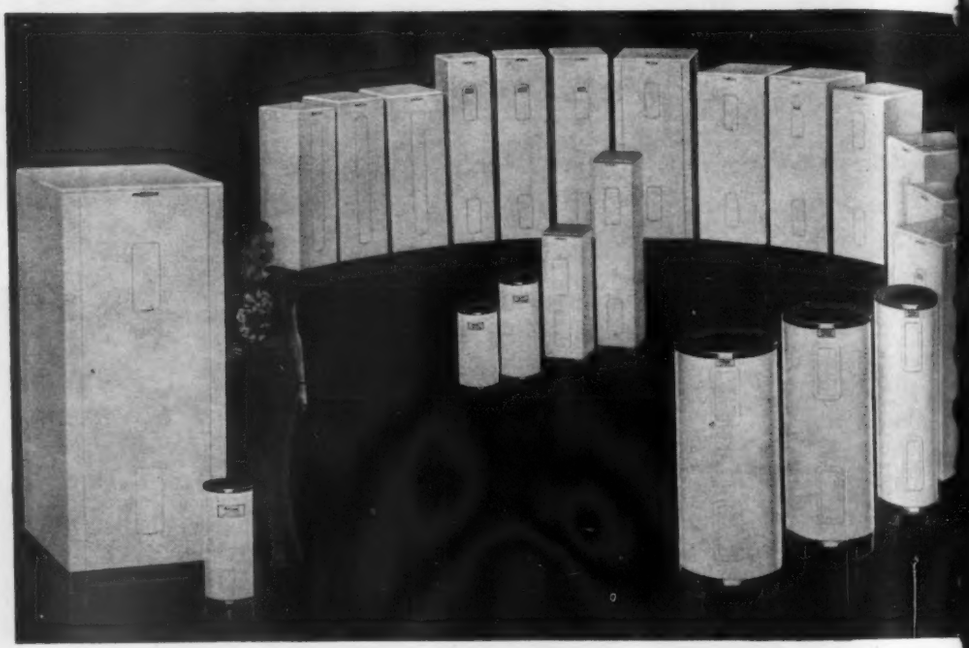


"THE MAGIC FAUCET"

This interesting new Hotpoint slide-sound film is a convincing presentation of the advantages of electric hot water service. Use it in your sales, employee or organization meetings. Show it to consumer groups, architects and builders. Tells a full story.

NEW DIRECT MAIL

Three new direct mail pieces will help you focus the attention of prospects on the superior advantages of electric water heating. See them—use them. Ask your Hotpoint representative.



More automatic electric water heaters were sold in 1936 than in the previous four years combined. There is no longer any question that the electric water heater is following the sharp upward sales trend of the electric range and refrigerator.

Reap the rewards that this lusty infant of the appliance business offers to active promotion. The average consumption of the modern electric water heater is about 300 KWH per month. Think of the possibilities this offers for increased revenue.

Hotpoint is ready with the most complete line of Vogue and Master water heaters in history, in capacities ranging from 1 to 140 gallons. And a dynamic sales plan that helps you build water heater business. Call your nearest Hotpoint distributor or representative now.

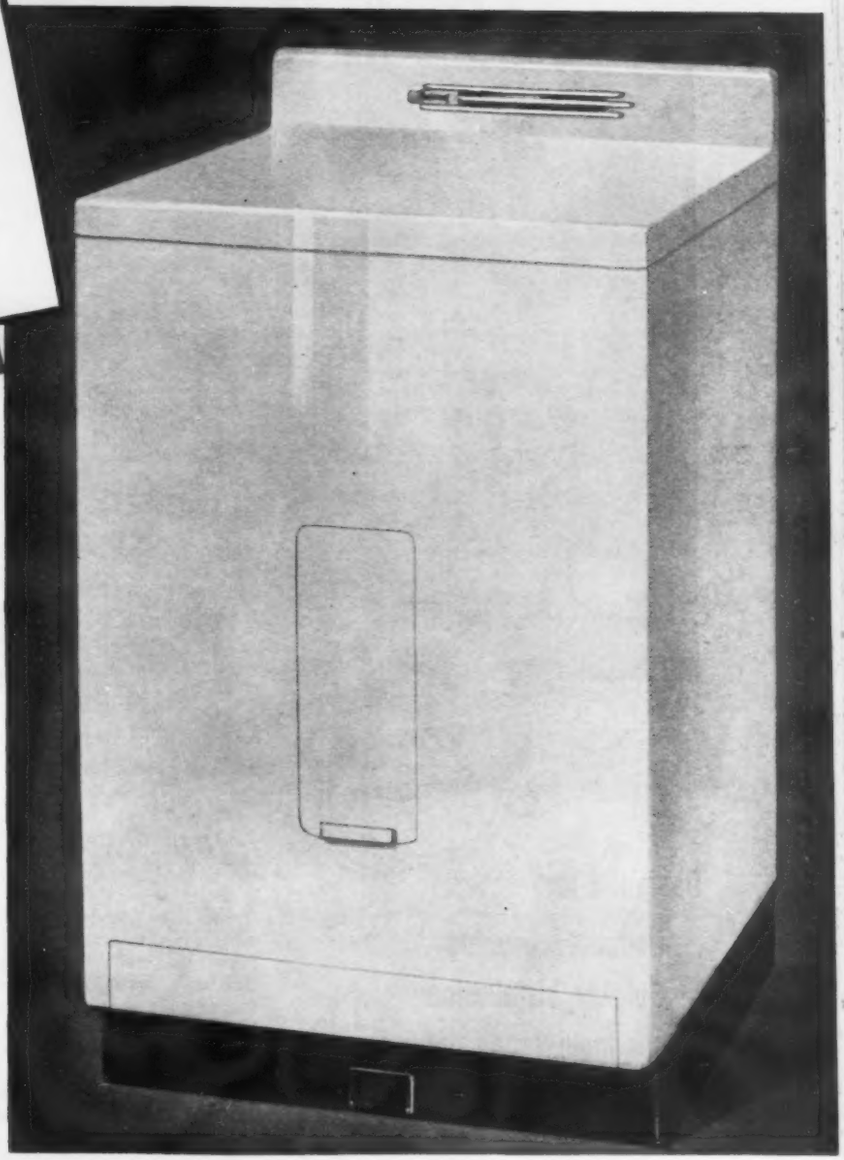
NEW NEWSPAPER ADVERTISEMENTS

This popular series of newspaper advertisements will create new interest in electric hot water service. Each tells a convincing story of the advantages of electric water heating service. Complete—ready to run in your local newspapers. See your local distributor or Hotpoint representative.

PRINT IN BINDING

a new addition to a FAMOUS FAMILY

HOTPOINT VOGUE CABINETTE WATER HEATER



Now comes a new member of Hotpoint's famous Vogue family of automatic electric water heaters!

The Cabinette is a 30-gallon heater, beautifully designed and styled to fit harmoniously with other Hotpoint appliances in the all-electric kitchen.

24″ wide, 25″ deep, 36″ high, finished in white, with work surface of stain-resisting porcelain enamel and a 4″ black trim, toe space.

Call Hotpoint representative or distributor.

CALROD HEATING UNIT ASSURES GREATER SPEED AND EFFICIENCY

Hotpoint's famous Calrod Heating Unit is sealed airtight from all air and moisture, and immersed directly in the water within the storage tank. All heat generated is delivered directly to the water.

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.
5612 W. Taylor Street, Chicago, Illinois

RIDE WITH HOTPOINT IN 1937

AUTOMATIC Hotpoint ELECTRIC

WATER HEATERS

New Colt Noark Pull-out Troughing Switches

Designed for

- . . Unlimited banking
- . . Quicker Installation
- . . Minimum space requirements
- . . Safer operation

These new Colt-Noark switches are built for quicker, inexpensive installation . . . either as single units, or in troughing set-ups using any number of switches. Two types are available . . . Catalog 92, a two-pole unit, and Catalog 94, a three-pole unit, both 30 amperes. In troughing, they are securely fastened in series by use of simple coupling straps and end walls. They are of the knife blade pull-out type, switching action being obtained by simply opening the auxiliary cover, on the inside of which the blades are located. The main cover operates as a dead front plate and can be locked. Each Unit is furnished with solid neutral and method of grounding. In banking, end walls are removed, leaving plenty of wiring room, with no looping of wires required. These units are the latest profit-producers introduced by Colt-Noark. Send for descriptive envelope stuffers and full information.

COLT'S PATENT FIRE ARMS MFG. CO., ELECTRICAL DIVISION HARTFORD, CONN.

H. B. Squires Co., Pacific Coast Representative

100 Years of Manufacturing Experience is back of every Colt Built Product

COLT-NOARK

SWITCHES INDUSTRIAL CONTROL EQUIPMENT FUSES

Boston
New York
Chicago
Philadelphia

Announcing the New

"A" LINE FLOODLIGHTS

A complete new line of efficient, low-cost, enclosed floodlights with universal application FOR

● Westinghouse now offers a new line of low-cost floodlights with many features of efficiency and construction previously available only in the most expensive floodlights. The new "A" Line floodlights are offered in five sizes . . . 8, 10, 14, 16 and 20 inch . . . also AV-16 and AV-20 for vertical mounted lamps.

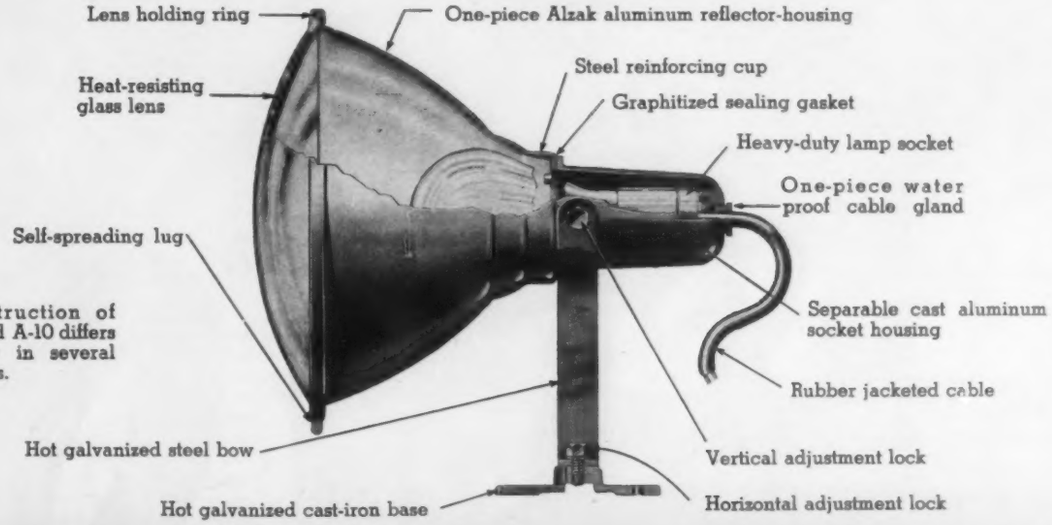
The A-8 and A-10, complete with cord and plug, offer many portable features which give them added salability as general utility floodlights for homes and farms. All units offer the added efficiency of patented Alzak finished aluminum reflectors . . . a finish that can always be maintained at peak efficiency.

Get complete facts about these new floodlights . . . today! Westinghouse Electric and Manufacturing Company, Lighting Division, Edgewater Park, Cleveland, Ohio.

ASK *your Westinghouse Jobber for details*

Roadside Stands
Service Stations
Parking Lots
Real Estate Displays
Store Fronts
Signs and Displays
Delivery Platforms
Used Car Lots
Industrial Yards
Construction
Docks and Piers
Yards and Buildings
Ship Yards
Horseshoe Courts
Basketball Courts
Beaches and Pools
Trap and Skeet Courses
Archery and Target Ranges
Tennis Courts
Golf Driving Courses
Skating Rinks
Racing Tracks
Campus and Drill Fields
Airport Aprons
Farms
Homes

CONSTRUCTION FEATURES TYPES A-14, 16 AND 20*



*Construction of A-8 and A-10 differs slightly in several features.

WHEN YOU THINK OF *Lighting* THINK OF

Westinghouse

Large Stocks of Roebling *Rubber Insulated* Building Wire

AT LOS ANGELES — PORTLAND — SAN FRANCISCO — SEATTLE

Insure on the dot Delivery Service

All of the offices listed have ample stocks of code grade, also stocks of the more commonly used sizes of 30% grade available for delivery from warehouse.

Made in types and grades for every purpose including:

Code Grade... Intermediate Grade
30% to 40% Performance Grade
35% to 40% Performite Grade
Solid or Stranded, Single or Multiple Conductor.

60 other types of Roebling Electrical Wires and Cables available.

JOHN A. ROEBLING'S SONS CO. *of* CALIF.
Los Angeles Portland San Francisco Seattle

ONLY A FINE PRODUCT MAY BEAR THE NAME ROEBLING

Measure Minute Currents without leveling

WESTON double pivoted

MICROAMMETERS

MILLIVOLTMETERS

Gone is all need for leveling the instrument when measuring minute currents. The WESTON Model 622 series of ultra-sensitive instruments—being of the double-pivoted type—are used simply in the normal horizontal position, without leveling. The instruments in this series include DC and AC Thermocouple types, and are available in ranges and sensitivities for ordinary field and laboratory work, as well as for service demanding ultra-sensitivity; such as circuits involving thermocouples, pyrometers, electron tubes, etc. The cases are Bakelite, of modern design; and the large scale opening and increased length of the hand-calibrated mirror scale simplifies accurate reading. The instruments in ranges from 20 microamperes up are electrostatically and magnetically shielded. Lower ranges, down to 5 microamperes, are electrostatically shielded.

Other features of the Model 622 series, such as the convenient switching arrangements, the simplicity of connections, and quick replacement of thermocouples, merit your immediate investigation. Bulletins are freely offered . . . Weston Electrical Instrument Corporation, 577 Frelinghuysen Avenue, Newark, New Jersey.

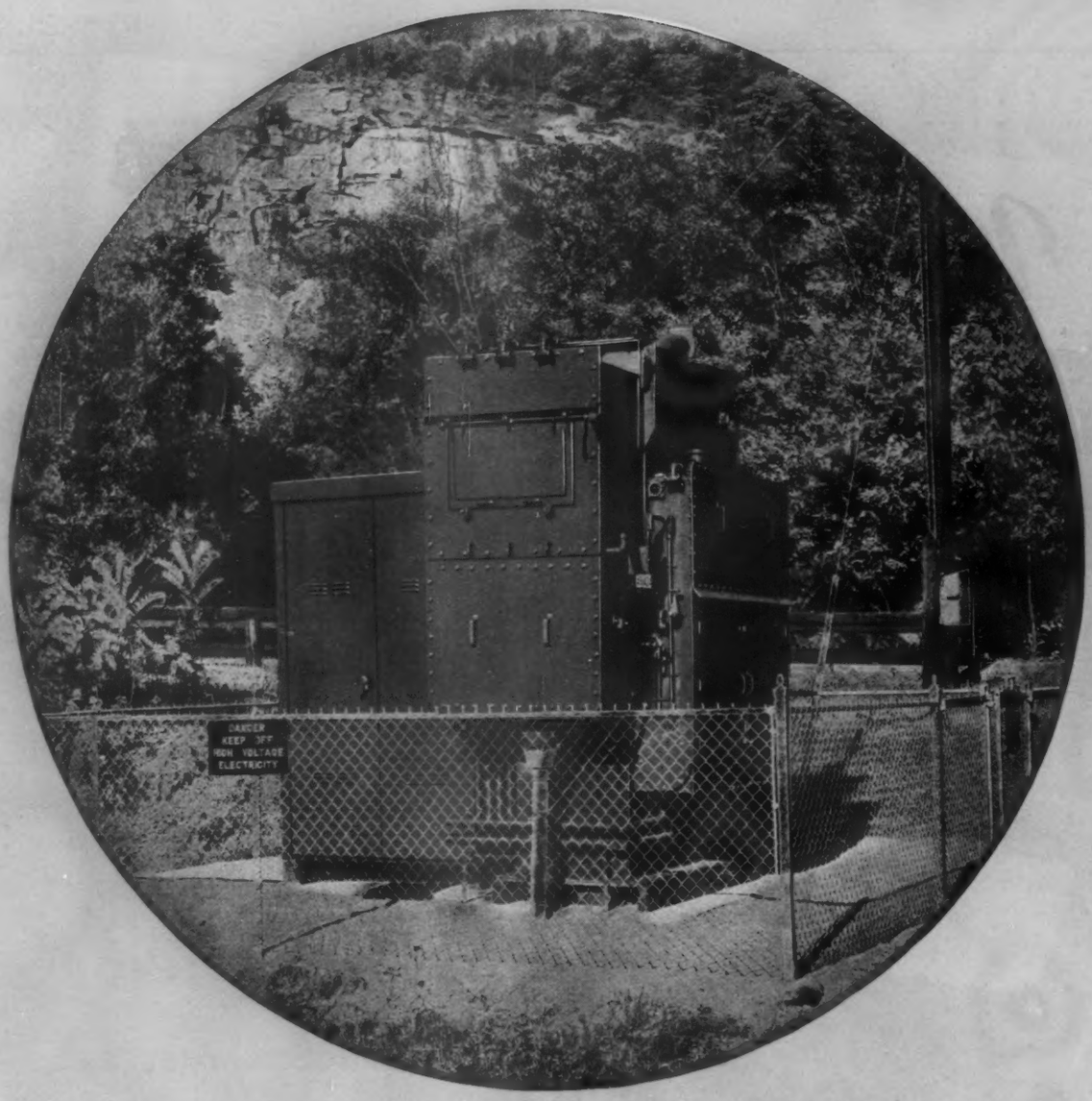
WESTON *Instruments*

PACIFIC COAST REPRESENTATIVES

Eicher & Bratt,
263 Colman Bldg.
Seattle, Wash.

Herman E. Held,
420 Market St.
San Francisco, Calif.

A. A. Barbera,
Subway Terminal Bldg.
Los Angeles, Calif.



THE TREND TO UNIT SUBSTATIONS CONTINUES

THE savings that unit substations make possible are directly responsible for the growing trend toward these factory-assembled units. Each new installation proves once again that unit substations:

Save System Investment
Equipment cost is reduced, land requirements are less, no buildings are needed, taxes are reduced, and distribution-feeder expense is curtailed.

Permit Capacity to Be Added Quickly in Small Increments
Capital investment and carrying charges are added only as needed—system planning is greatly simplified.

Provide Greater Safety
All live parts are metal enclosed.

Make a Compact Installation
Small size and compact arrangement permit the most advantageous location.

We shall be glad to discuss the economies possible with G-E unit substations—as applied to your specific conditions. Write for Bulletin GEA-2078, which outlines the operating advantages of this increasingly popular equipment. Address General Electric Company, Dept. 6C-201, Schenectady, New York.

310-16

GENERAL ELECTRIC

ELECTRICAL WEST

DEVOTED TO THE ECONOMIC PRODUCTION, TRANSMISSION AND DISTRIBUTION OF ELECTRIC POWER AND ITS APPLICATION TO INDUSTRY, COMMERCE, AGRICULTURE AND HOME IN THE PACIFIC EMPIRE, AND TO THE MARKETING OF EQUIPMENT AND APPLIANCES AND OTHER UTILIZATION DEVICES IN THAT AREA

April 1937

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Looking Ahead to 1980

By GEORGE A. FLEMING
Engineer, U. S. Bureau of Reclamation
Denver, Colo.

How increasing individual usage may affect generating requirements, particularly federal hydro-electric developments. The author formerly was a member of the engineering department of the Southern California Edison Co., Ltd.

LONG range trends in electrical production provide a gage for optimism and a basis for judging relations in electrical statistics. Little accuracy or science is claimed for this 50-yr. extension of production figures, but the accompanying table, chart and explanation may aid in understanding present relations and in formulating conclusions as to the future of the electrical industry.

The indicated production of 270 billion kw-hr. by the public utilities of the United States in 1980, at approximately twice the present age and at the end of a full century for the industry, assumes a doubling of the 1936 average of 880 kw.-hr. per person. This is purely arbitrary, but the likelihood of its being equalled or exceeded is evidenced by the fact that the 1936 per capita average for the Pacific Coast States is within 9 per cent of the assumed figure of 1,760 kw.-hr. per person. Also, it is pertinent to note that the value may be reached with the rapidly decreasing increments shown in col. 7 of the table.

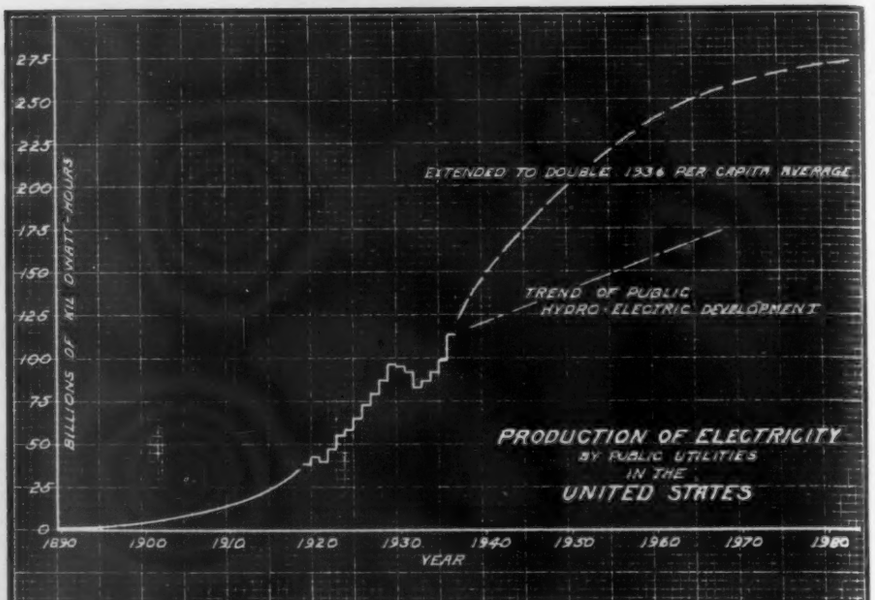
Production statistics were taken principally from reports of the Federal Power Commission and the Geological Survey. Population estimates were taken from publications of W. S. Thompson and P. K. Whelton, who are among the leading authorities on population data. The figures represent approximate averages of a long list of studies which place the 1980 population of the United States at between 127 and 207 million people, as compared with approximately 129 million today.

A simple method of noting the relation beween generating capacity and production may be gained by comparing the figures in cols. 4 and 5 of the table. A ratio of one-third between average production and rated capacity, commonly termed capacity factor, approaches so closely the historic value, in all but exceptional years, that it may well be taken as a basis for comparison. Production in 1932, at the bottom of the depression, was 21 per cent below one-third of the total rated capacity and in 1936 it was 6 per cent above. The 1936 capacity factor is the highest on record, with the single exception of 1923, when production was 9.5 per cent above the one-third rating base.

Trends in Electrical Production

Year	Population	Capacity		Production		
	(Millions)	Kw. Rating (Millions)	at 1/3 Rating Kw.-Hr. (Billions)	Kw.-Hr. (Billions)	Production Kw.-Hr. Per Capita	Per Capita Increase Percent
1879	First central station					
1890	62.9	0.2	0.6	0.5	8	...
1900	76.0	2.0	6.0	4.0	53	563
1910	92.0	6.0	17.0	15.0	164	210
1920	105.7	14.4	42.1	43.6	412	151
1921	...	15.5	45.3	41.0	...	...
1922	...	16.0	46.8	47.7	...	...
1923	...	17.4	50.9	55.7	...	...
1924	...	19.5	57.0	59.0	...	...
1925	...	23.6	69.0	65.9	...	...
1926	...	25.4	74.2	73.8	...	...
1927	...	27.7	81.0	80.2	...	...
1928	...	29.6	86.5	87.9	...	...
1929	...	32.0	93.5	97.4	...	...
1930	122.8	34.3	100.0	96.0	781	90
1931	...	35.6	104.0	91.7	...	...
1932	...	36.1	105.3	83.2	...	...
1933	...	36.0	105.1	85.4	...	...
1934	...	35.9	104.9	91.2	...	...
1935	...	36.1	105.3	99.4	...	...
1936	129	36.6	107.0	113.5	880	...
1937	...	...	...	...	...	...
1938	...	...	(Future added capacity is	...	...	...
1939	...	...	for public hydro projects	...	...	...
1940	133	...	at 50 pct. capacity factor)	150	130	45
1950	143	...		200	1415	25
1952	...	45.0	144.0	210	...	...
1960	150	...	...	240	1600	13
1970	154	...	...	260	1700	6.5
1980	155	...	...	270	1760	3.5

Data have been added to the chart and table to indicate the position of public hydro-electric developments in the trend relations. The figures assume completion in fifteen years, or by 1952, of the Government's Boulder Canyon Project, Tennessee Valley Authority program, Bonneville, Fort Peck, and Grand Coulee power plant, the Saint Lawrence River development, and 25 per cent of the total for smaller projects. Completion of these developments would result in the use of approximately 24 per cent of the nation's practical hydro-electric possibilities, as compared with 13 per cent today.



Types of Plants

Assuming that the balance of the estimated new demands for 1952 will be served by fuel-power plants, the resulting ratio of hydro-electric to total power production would be 33 per cent, or 3 per cent less than the 36 per cent ratio for 1936. If the above rate of hydro-electric development is continued beyond 1952, there is indicated a rapidly decreasing demand for other new installations, although 1980 would be passed before hydro-electric plants are seen to generate one-half of the total demand.

In estimating future requirements for generating equipment, the factor of obsolescence is becoming of increasing importance as the industry ages. In 1935, the Federal Power Commission estimated that with a resumption of pre-depression activities as much as 2,000,000 kw. of capacity may need to be replaced. It is stated that many observers estimate the economic life of steam plant equipment at twenty years, and it is noted that the capacity listed for replacement represents approximately 90 per cent of the steam plant equipment now over that age.

Demand for Equipment

If one assumes that in ten years, or by 1947, additional replacements will be made representing only 30 per cent of the steam plant capacity that would have then become over twenty years of age, the conclusion is easily reached that the industry may see the building of more generating equipment, for new loads and replacements in the next ten years than occurred in the past twenty years. Also, it appears probable that over one-third of the new capacity will be in fuel-power equipment.

Reports on weekly production of central stations, as issued by the Edison Electric Institute and published in the daily press, cover approximately 94 per cent of the capacity included in the Government's figures used in this study. These data, especially the comparisons made with corresponding periods of the previous year, serve admirably in noting current changes from the long range trend discussed in this article.

The 1937 production figures released to date show a continuation of practically the same rapid increase in demand that occurred during 1936. This is slightly above the rate of increase indicated by the extensions on the chart and table and is current evidence that they are conservative. Such comparisons illustrate their use as a basis for relating frequently-quoted statistics and in judging the affect of ever-changing factors and forces on historic trends.

"Trust Me," He Said

And after the thunder and threats of the victory dinner came the fireside chat; and in the fireside chat a still small voice. Trust me, said the most persuasive radio speaker in the world, bringing to the people not a frank and reasoned argument but the soothing calm of the hypnotist.

Trust me, he said, for you cannot trust a court which in the gold clause case divided five to four, barely escaping a decision which "would have thrown all the affairs of this great nation back into hopeless chaos." But he has prophesied chaos before, and there has been no chaos.

Trust me, he said, for I seek harmony, not domination, I am only one horse in a three-horse team, I am not the driver. Not the driver? He is the boss of Congress, the boss of the party that rules Congress. He drives the second horse and now seeks authority to drive the third horse, which prefers to go on about its business in peace.

Trust me, he said, and do not fear that this congressional enactment which I seek will be a precedent for future Congresses to act more dangerously against democracy, because America must always trust Congress, there is no help for it. But America has never trusted Congress or any other branch of the government completely. That is why the Constitution set up checks and balances, dividing power beween the courts and Congress and the President, so that none of these might ever become a despot.

Furthermore trust me, he said, for what I seek is merely to carry out the plain terms of the Constitution, which "gave to the Congress the ample broad powers 'to levy taxes * * * and provide for the common defense and general welfare of the United States'." Trust you, Mr. President, when by a trick of asterisks you have just misquoted the Constitution? The Constitution did not give Congress broad and vague powers to provide for the "general welfare." It specified the powers of Congress, and it authorized Congress to levy such taxes as were necessary in carrying out those powers. The exact words are, "to lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defense and general welfare of the United States, but all duties, imposts, and excises shall be uniform throughout the United States." In other words, to levy taxes *in order* to carry out the powers elsewhere specified. No power except the taxing power is granted by that clause of the Constitution which the President garbled.

And because the Supreme Court does not garble the Constitution, thoughtful Americans will prefer to trust and protect the Supreme Court.

Reprinted from Business Week

Distribution Transformer Loading*

New Method of Checking Transformer Output, Based on Studies of Domestic Load Charistics, Saves System Investment. Dry Type Units Suggested For Light Load Rural Lines

By F. H. FERGUSON
Puget Sound Power & Light Co.

PROPER loading of distribution transformers is a subject at present receiving national attention as one means of lowering distribution costs. Recently, the transformer committee of the A.I.E.E. recommended that its standards be revised to allow intermittent overloads on distribution transformers in accordance with the following table, which appeared in January 1937, *Electrical Engineering*, page 35.

Duration of Load	Load in Multiples of Continuous Rating
4 Seconds	25.0
10 Seconds	13.7
30 Seconds	6.7
60 Seconds	4.75
5 Minutes	2.80
30 Minutes	1.85
60 Minutes	1.60
2 Hours	1.40
5 Hours	1.20

The permitted overload percentages may be still further increased for lower ambient temperatures. An increase in load of one per cent for each degree that the ambient air is below 30 deg. C. is to be allowed, except that no further increases are to be made for ambient air temperatures below 0 deg. As distribution transformer demands usually occur in winter, considerable overload should be allowed.

Previous Methods

Realizing that inexpensive methods of checking loading on transformers must first be developed, M. T. Crawford presented a paper before this Section in 1935, giving means used by Northwest member companies in gathering these data. It contained a new plan under experimentation by the Puget Sound Power and Light Co. where loading of individual transformers was estimated in the office by use of maps and meter reading books and related transformer demand to customers' kw.-hr. consumption. The details of this plan were developed by Ray Rader and were published on page 44 of January 16, 1937, *Electrical World*. It is the purpose of the present paper to show some of the results of this plan in operation.

The Seattle area, or Central division of the company, was first chosen to apply the plan. In this territory, there are in service, approximately, 14,400 line transformers with a total capacity of about 167,000 kva. Of these, about 6,800 transformers with 105,000 kva. capacity are located on the city of Seattle circuits, while the remainder are on suburban lines. Studies indicated that these transformers were operating in a very underloaded condition and that full advantage was not being taken of existing capacity due to insufficient data as to loading. Some circuits in the networked area had a ratio of installed distribution transformer capacity to circuit peak load as high as 2 to 1. The rural circuits were much worse; the ratio running up to 10 to 1.

Tables Developed

Transformer loading tables were developed by the engineering department relating number of range, water heater and lighting customers to transformer size. Experimental data were obtained to check the tables and they have become amazingly accurate. An engineering clerk may, with a meter reading book, a circuit map showing transformer locations, and the standardized work sheets, rapidly arrive at a satisfactory determination of the loading of the transformers in question. A great deal of time and study was necessary to develop the tables in their present form which were published in the previously mentioned article in the *Electrical World*.

To date, 22 circuits have been completed by the distribution engineers and recorded. Of the 2,200 transformers studied, 437 were listed as so lightly loaded that they could be removed. However, after voltage regulation investigations, only 205 were finally removed. Thus 4,600 kva. of capacity, representing a plant value of over $17,000, was recovered to be used elsewhere, at a removal cost of not more than $1,500 for crew labor, plus an investigation cost of about $750. Readings by "spot check" with ammeters or by installation of graphic meters or similar apparatus to accomplish above study would have cost at least $5,000.

In a very few cases, overloaded transformers were found by this method and were immediately changed to larger sizes. As well as ascertaining the lightly loaded and overloaded transformers, this system indicates the amount of spare capacity available in each transformer and greatly assists the distribution engineer in determining his capacity requirements. Without data of this kind, capacity is often increased when new load is added which could very well be added to existing transformers. The capital saving made in this manner cannot be estimated in the local area, but during the past two years, only about 300 kva. in new transformers have been added to the lines, and these were of the smaller sizes for new rural extensions. Load growth, which has been comparable in this section with other northwest areas has been cared for by the existing capacity, or by using transformers salvaged from places where too much capacity was discovered.

Rural Studies

One rural territory has been investigated and results found there are comparable with those already explained for the city circuits. Rural lines are greatly over-transformered, due to using transformers of available standard sizes and to distances between customers. As a suggestion, thought should now be given to using the dry type of transformer in small units made to fit the actual load expected for these widely separated customers.

The following observations were made during the transformer study:

1. Very few transformers burn out due to overload, indicating in general a too-liberal choice of size. A higher percentage of burn-outs would indicate better transformer economy!

2. The locating of transformers for

*A report prepared for the Transmission and Distribution Committee, Engineering and Operation Section, Northwest Electric Light & Power Association, for presentation at 1937 Annual Section Meeting.

Supplement on Distribution Transformer Loading Report

THE Puget Sound Power and Light Co. uses a new technique for determining the most efficient distribution transformer size which eliminates the guesswork of estimations from connected load and the expense of continuous "spot-checks". By converting known or easily obtainable data into the tables shown on this page, distribution transformer sizes can be selected easily and accurately. The tables take into consideration the short time peak (generally occurring in the coldest weather) as well as the diversity, both of which make for maximum economy of installed kva. Office records of customer billings and locations make possible checking of transformer sizes at the desk rather than in the field.

The results obtained from the use of the tables have been surprisingly accurate and have resulted in large savings in capital and operating expense. The company's field engineers no longer have to employ a liberal policy in setting transformers which, in turn, reduces the ratio between the kva. connected on any particular feeder and the kva. of transformer capacity of the feeder. A complete description of the plan and the methods employed in obtaining data for the tables will be found in the Jan. 16, 1937 issue of *Electrical World*.

Instructions for Using Tables

TRANSFORMER LOADING

Instructions for obtaining the size of transformer to use for any number of range, water heater and lighting customers:

1. Locate the figure in Table I corresponding to the number of ranges and number of water heaters;

2. Locate the figure in Table II corresponding to the total number of lighting customers to be served from that transformer, including range and water heater customers;

3. The sum of these two figures represents the transformer capacity required for these customers.

Example:

2 customers have ranges and water heaters
1 customer has range but no water heater
2 customers have lights and appliances only

5 Total customers
3 ranges and 2 water heaters require 6.5 Kva, (Table I)
5 customers require for lighting 1.9 Kva, (Table II)
TOTAL Kva. required.... 8.4 Kva.

DETERMINING SIZE

Find in Table III the symbol (A,D,J, etc.) corresponding to number of ranges and water heaters, irrespective of the number of customers.

Locate this same symbol in the left hand columnar index of Table IV. Follow this symbol horizontally to the vertical column corresponding to total number of customers served. The figure thus located is the size of transformer required.

Table I—Transformer Capacity in Kva. Required for Ranges and Water Heaters

Number of Ranges	0	1	2	3	4	5	6	7	8	9	10
10	10.8	10.8	10.8	10.8	11.5	11.5	12.1	12.7	13.2	14.4	15.0
9	10.1	10.1	10.1	10.1	10.8	10.8	11.4	12.0	12.5	13.7	14.3
8	9.6	9.6	9.6	9.6	10.3	10.3	10.8	11.4	12.0	13.1	13.7
7	9.0	9.0	9.0	9.0	9.6	9.7	10.2	10.8	11.3	12.5	13.1
6	8.4	8.4	8.4	8.4	8.9	8.9	9.5	10.1	10.9	11.8	12.4
5	7.8	7.8	7.8	7.8	8.3	8.3	8.8	9.4	10.9	11.6	12.4
4	7.2	7.2	7.2	7.8	7.8	7.8	8.2	9.0	10.9	11.6	12.4
3	6.5	6.5	6.5	7.0	7.0	7.0	7.5	9.0	10.8	11.6	12.4
2	5.0	5.5	5.5	5.8	5.8	6.3	7.5	9.0	10.8	11.6	12.4
1	2.5	3.8	3.8	4.5	5.4	6.3	7.5	9.0	10.8	11.6	12.4
0	0	1.8	2.7	4.5	5.4	6.3	7.5	9.0	10.8	11.6	12.4

Number of Water Heaters

Table II — Transformer Capacity Required for Lights and Small Appliances

Total Customers	Kva. Required	Total Customers	Kva. Required
1	0.5	13	4.3
2	1.0	14	4.6
3	1.3	15	4.9
4	1.6	16	5.2
5	1.9	17	5.5
6	2.2	18	5.8
7	2.5	19	6.1
8	2.8	20	6.4
9	3.1	21	6.7
10	3.4	22	7.0
11	3.7	23	7.3
12	4.0	24	7.6

Table III

No. of Ranges	0	1	2	3	4	5	6	7	8	9	10
10	O	O	O	O	P	P	Q	Q	Q	Q	Q
9	N	N	N	N	O	O	P	Q	Q	Q	Q
8	M	M	M	M	N	N	O	P	Q	Q	Q
7	L	L	L	L	M	M	N	O	P	Q	Q
6	K	K	K	K	K	K	M	N	O	Q	Q
5	J	J	J	J	K	K	K	M	O	P	Q
4	I	I	I	J	J	J	K	M	O	P	Q
3	H	H	H	I	I	I	J	M	O	P	Q
2	E	F	F	G	G	H	J	M	O	P	Q
1	C	D	D	E	F	H	J	M	O	P	Q
0	A	B	C	E	F	H	J	M	O	P	Q

No. of Off-Peak Water Heaters

Table IV—Transformer Size Required

Symbol	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Q								15	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
P								15	15	15	25	25	25	25	25	25	25	25	25	25	25	25	25	25
O							15	15	15	15	15	15	25	25	25	25	25	25	25	25	25	25	25	25
N							15	15	15	15	15	15	15	15	15	25	25	25	25	25	25	25	25	25
M						15	15	15	15	15	15	15	15	15	15	15	15	15	15	25	25	25	25	25
L						15	15	15	15	15	15	15	15	15	15	15	15	15	15	25	25	25	25	25
K					15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	25	25	25
J				10	10	10	10	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
I			10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
H			10	10	10	10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15	15	15	15
G			7.5	7.5	10	10	10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15	15	15
F		7.5	7.5	7.5	7.5	10	10	10	10	10	10	10	10	10	15	15	15	15	15	15	15	15	15	15
E		7.5	7.5	7.5	7.5	7.5	7.5	7.5	10	10	10	10	10	10	10	10	10	15	15	15	15	15	15	15
D	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	10	10	10	10	10	10	10	10	15	15	15	15	15
C	3	5	5	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	10	10	10	10	10	10	10	10	10	15
B	3	3	5	5	5	5	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	10	10	10	10	10	10	10
A	1.5	1.5	1.5	3	3	3	3	3	5	5	5	5	5	5	5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5

No. of Customers

(This includes all customers using light, either alone or in combination with ranges, water heaters, etc.)

proper voltage regulation is of prime importance.

3. Load growth should not be anticipated too liberally. It can usually be accommodated by permitted overloading of transformers, or by excess capacity present due to spacing of steps in standard sizes. It can also be taken care of by taking advantage of diversity existing amongst a large number of loads over a smaller number of loads.

4. It costs approximately one-tenth the value of a transformer to move it from one location to another. True transformer operating economy lies in shifting transformers with the load rather than installing larger sizes than necessary in anticipation of load growth, thereby incurring larger transformer losses.

5. Perpetual records of loading on all transformers should be kept, and a routine system established to keep the loadings up to date.

That transformer loading is receiving greater attention by all member companies, is evidenced by replies to questionnaires sent out to twelve representatives of the transmission and distribution committee at the first of this year. These companies reported an average ratio of transformer capacity to peak load of 1.13 to 1, compared to 1.32 to 1, reported in 1935.

The following summary of these replies indicates a trend toward better loading by all companies since the previous report:

COMPANY A:

Loading is ascertained by graphic ammeters on suspected overloaded transformers and in response to voltage complaints. Two feeders had ratios of transformer capacity to peak load of 0.66 to 1, and 0.55 to 1, with voltage regulation not exceeding 5% plus or minus in so far as secondaries or transformers were concerned. This company loaded its transformers heaviest of the twelve whose reports were received.

COMPANY B:

Loading is detected with thermotels, but mention is made that loading transformers on a temperature basis, requires very careful watching in order to avoid burn-outs and outages.

COMPANIES C, D, E, and F:

Practices are the same as reported in 1935. Company E, has perpetual record and can tell at any time, the approximate load on any of its transformers.

COMPANY G:

Uses thermotels and "spot-tests" on questionable transformers. This company took data for the month of November on a building of sixty-seven apartments and found a demand of only 46.4 kw. on a total connected range load of 405.4 kw. The service transformer was then changed to a smaller size.

COMPANY H:

Methods similar to those reported in 1935, are still in use. This company has installed several CSP transformers which have circuit breakers protecting the transformers from overload, and indicators which show when dangerous overloading conditions are being approached. Their experience with these is satisfactory to date.

COMPANY I:

Now uses "clip-on ammeters" to take readings on secondary leads during peak hours. This method is found rapid and gives unbalance data on three-wire circuits. Tests made on twenty-four feeders indicated an average ratio of 1.14 to 1, of transformer capacity to peak load on circuits.

COMPANY J:

A complete analysis of two rural feeders and two stretches of city secondaries were furnished by this company. The comparison of these two types of service showed why transformer investment is so much greater in rural areas than in cities. The rural lines had ratios of 5.00 to 1, and 4.30 to 1; while the urban lines had 1.14 to 1 and 1.19 to 1.

COMPANY K:

This company now uses thermal ammeters with 30-min. maximum ampere demand attachments to ascertain loads on their transformers. These instruments are mounted in boxes for primary installation, and are equipped with switches for various scale readings.

Max-I-Meters have lately been used and have been found advantageous over the primary method as load balance is indicated on secondaries, and these instruments can be installed more cheaply as only one lineman is necessary.

Transformer loading charts have been developed for the use of the operating department as a guidance in determining maximum permissible loading from readings obtained by tests made in any month during the year. A curve showing primary amperes plotted against mean monthly temperatures was prepared for each standard size of distribution transformer. From these curves, a composite nomograph was drawn for use in the field. The basic information from which these curves were developed, was obtained from "Effects of Overloads on Transformer Life," —published in December, 1934, *Electrical Engineering*.

Further study of this subject by the engineering and operation section of the Northwest association should result in a more uniform basis of transformer loading and better operating economy.

Developing Lower Cost Distribution Systems*

By R. J. DAVIDSON
Pacific Power & Light Co.

THE subject of this paper indicates a broad field, but the material offered herein will be limited to rural line construction. For the past several years increasing attention has been devoted to this part of the utilities' program for expanding service facilities. Economies were demanded during the depression years due to financing difficulties. More recently lower costs were necessary, particularly in this territory, due to the fact that the remaining unserved rural areas were sparsely populated. The comparatively high saturation of farms already served left mainly the fringes for further expansion. The long distances between habitations and the comparatively small loads to be secured required inexpensive lines. The realization of the problems involved and the manner in which they have been solved makes an interesting and commendable record.

In order to accumulate the data herein submitted, letters of inquiry were sent to the major utilities in the Northwest and a high percentage of replies was received. The excellent paper on "Rural Line Construction" presented by H. M. Jones at last year's meeting tabulates specifications and savings in rural line costs. This report will carry on the subject from that point and will cover the continuing progress in lowering costs.

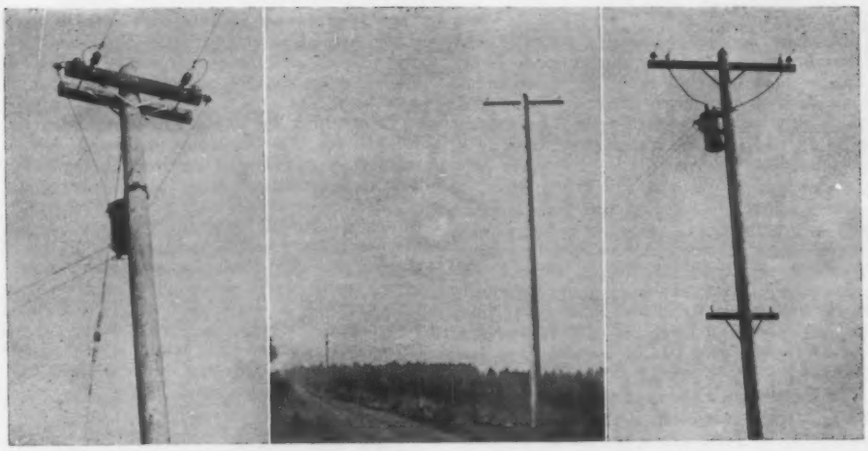
A study of the replies received indicates that there are many types of construction in present use, some of which are yet in an experimental stage. Some types will undoubtedly be eliminated, and perhaps some new ones devised, but it is apparent that there will not be a common standard. The wide open areas versus the more rugged or the wooded terrain, and the differing weather exposures, will demand types of construction suitable to the conditions.

The following experiences of the various companies should be helpful in reviewing individual practices and may afford new ideas for further reduction of costs. Dollar costs have been omitted because they are meaningless without a full understanding of prevailing conditions and requirements, the details of which are beyond the scope of a summary of this nature.

COMPANY A:

Most extensions are single-phase with an average of five or six customers per mi. of line. They are usually built along public roads, with some private right of way where road relocations are in prospect. Lodgepole pine poles with creosote butt treatment are used. Straight lines have 35-ft. poles with crossarm construction. Higher poles, as required, are used at major angles and dead-ends with conductors on strain-type insulators arranged in a vertical plane. Normal span lengths are 500 ft. with galvanized steel cable conductor, composed of 3 strands of No. 9

*A report prepared for the Transmission and Distribution Committee, Engineering and Operation Section, Northwest Electric Light & Power Association, for presentation at 1937 Annual Section Meeting.



(Left)—Company C's steel-wire dead-end construction and transformer mounting. (Center)—Company C's typical long span construction. This company has found the use of galvanized steel wire economical (see text). (Right)—Company G's long span construction with transformer mounting. The lower crossarm carries a telephone circuit

AWG, having a breaking strength of 2,610 lb., weight of 105 lb. per 1,000 ft., resistance of 2.37 ohms per 1,000 ft. at 68 deg. F. No trouble has been experienced from mechanical loading or temperature. Regulation has been satisfactory due to light loads. Experience indicates that maintenance costs will be about the same as for standard short span construction.

Some prior use was made of No. 6 ASWG solid galvanized steel wire with an ultimate strength of 4,652 lb. This conductor was too stiff to handle and factory joints and field splices could not be depended upon to develop the full strength of the conductor. Some failures occurred due to vibration when insufficiently sagged.

A few single-bushing type transformers, without taps, have been used. The omission of taps has not been entirely satisfactory due to variation in primary voltages in different divisions of the system but has caused no trouble by reason of primary voltage drop on a particular extension.

Individual primary fuses are used where less than six transformers are installed on a line. Where there are more transformers an automatic reclosing fuse is installed at the junction with the main line. The long-span construction shows a saving of about 22 per cent for primary circuit only, when compared to short-span construction with copper conductors.

COMPANY B:

Native fir poles are used and are frequently furnished by the customers. Straight-line construction is crossarm type, using only one brace. Strain-type insulators, arranged in a vertical plane, are used at major angles and dead-ends. Conductors are No. 6 copper.

Some experimental lines were built with long spans, using Copperweld and ACSR conductors. Uneven terrain often required several short spans in the line and this condition, together with a cheap pole supply, did not permit any economy over the usual copper wire, short-span type of construction.

The present type of line costs 7 per cent or 8 per cent less than the long-span type, and approximately 30 per cent less than previous types. A small crew with a power derrick on a 1½-ton truck is used on rural line construction jobs.

COMPANY C:

Originally the rural lines were built with No. 6 HD copper on average spans of 220 ft. The need for less expensive lines brought about the trial use of several different types. Increasing the span lengths to 320 ft. average and 350 ft. maximum reduced costs about 8 per cent. The use of No. 8A Copperweld-copper on spans of 500 ft. average and 550 ft. maximum showed a saving of approximately 10 per cent when compared to copper on the shorter spans. The most recent development has been the use of high-strength steel wire on spans of 600 ft. average and 700 ft. maximum which shows a saving of about 22 per cent when compared with the conventional copper line. All of these lines are crossarm type construction. Pole butts are treated with arsenic paste.

The steel wire used is galvanized solid No. 6 ASWG with a breaking strength of 3,500 lb. The conductivity is equivalent to No. 14 copper which is sufficient for the relatively short, lightly-loaded branch lines on which it is used. A splice which would develop the full strength of the wire with satisfactory conductance, method of application, durability and cost was a problem that was solved after considerable testing. The ordinary "Western Union" type of splice, both plain and soldered with pure zinc, did not fully meet the requirements.

A compression sleeve type of splice gave satisfactory results but required the splices to be made on the ground as the special tools used were not convenient for use on the pole. A bar-type clamping device, easily made from readily available materials, proved satisfactory, particularly for emergency repairs. A flat steel bar (a piece of crossarm brace), about 13 in. long, was drilled to take a ¼-in. Crosby clip at each end. The wire ends were twisted together and this splice clamped to the bar by means of the two Crosby clips. An automatic splicing sleeve, with spring-actuated gripping jaws, was found to meet all requirements and it was adopted on an experimental basis. Its first cost is higher than for the compression type but the labor cost for installation is very low. Dead-ends are made on porcelain insulators of the guy-type or disc-type (with a large radius thimble), depending on the line voltage, and two Crosby clips are used to clamp the wire. Ordinary wire connectors are used for tap and jumper connections. This steel-wire type of line is still on an experimental basis as there has not been sufficient experience obtained to determine performance or maintenance costs.

On dead-end poles all equipment is attached, including the guy, and dead-ends are made up on the ground before raising the pole. This eliminates the necessity of climbing the pole after setting. With oil-tight transformers the same procedure is followed and the service drops are also attached to the pole on the ground. On tangent structures it is necessary to climb the pole only once to tie the line wires to the insulators.

Company J raises rural line poles into position with all the fittings and the transformer attached. Note the secondary rack

COMPANY D:

Normal construction consists of 40-ft. butt-treated cedar poles and ACSR No. 2 conductors on maximum spans of 500 feet with crossarm type of framing. This type of line has effected a saving of about 20 per cent, for primary line only, over the previous standard of No. 6 copper on maximum spans of 250 ft. on the same size poles.

In some instances the customers furnish native tamarack poles and dig the holes. These poles are butt-treated with preservative paste. Spans are limited to 250 ft. with No. 6 copper. This construction costs about 10 per cent less than the long-span type with No. 2 ACSR. Higher maintenance costs are anticipated.

COMPANY E:

Attention has been devoted principally to longer spans with steel-core aluminum rather than to new types of construction. Present practice calls for spans of 400 ft. normal and 500 ft. maximum, generally with No. 4 ACSR although some No. 2 ACSR is also used. Crossarm type of framing is standard. No single bushing transformers have been used. No trouble has been experienced that could be attributed to the greater span lengths. All ACSR lines are equipped with armor rods. During the past 10 years the cost of primary lines has been reduced 40 per cent to 50 per cent from previous practice.

COMPANY F:

Present standard construction is crossarm type, for the primary, with 40-ft. poles and No. 6 bare copper on maximum spans of 250 ft. The majority of the lines are 2,300-volt, single-phase, although the heavier loaded lines are three-phase. Secondaries are No. 4 w.p. copper on racks. Transformers are hung below the primary on a crossarm at right angles to the line arm. During the last few years costs, for primary line only, have been reduced about 20 per cent by increasing the pole spacing from the previous standard of

150 ft. and by the use of bare instead of weather-proof wire.

COMPANY G:

Previous standards for open level country were 250-ft. normal spans on 35-ft. creosote butt-treated cedar poles, No. 6 bare copper conductors, crossarm type of construction. During the past few years span lengths for this type of line have been increased to an approximate 310-ft. average and 335-ft. maximum. The use of longer spans has been limited to favorable conditions and no trouble has been experienced. Savings in cost are made due to the fewer number of poles required.

An appreciable mileage of longer span, single-phase line has been built with No. 8A Copperweld-copper primary and 35-ft. poles on 500-ft. to 550-ft. spans with crossarm type of framing. Secondary circuits, where required, are generally No. 6A Copperweld-copper. This type of construction has been on an experimental basis and the lines have not been in service for a long enough time to afford reliable performance data. No trouble has been experienced to date. There have been some minor modifications, for this type of line, of equipment and line fittings normally used on copper lines. Comparative estimates for similar installations indicate a saving of about 15 per cent over the previous standard copper lines. This is at some sacrifice in primary conductor conductivity. If a considerable amount of secondary circuit is required the copper conductor with proper span lengths shows a lower cost. The long-span construction is of particular advantage where hard pole-hole digging is encountered.

COMPANY H:

Present standards are 300-ft. spans with No. 6 copper and 400-ft. spans with No. 4 ACSR, except in areas subject to frequent sleet loading. Crossarm framing is used. Recent construction has been about 80 per cent ACSR. A trial was made of the use of secondary racks but this was unsatisfactory on 35-ft. poles on account of insufficient clearance where uneven ground conditions existed and where trees and brush were along the line. Also the tendency of the wires to whip together under conditions when ice is unloading is objectionable. Compared with earlier practice of using No. 4 copper on 150-ft. spans the present standard ACSR lines show a saving of about 50 per cent, service equipment excluded.

COMPANY I:

The farm lines have generally been built and owned by farm customer groups, except for transformers and meters which are owned by the company. Engineering service and line specifications are furnished by the company.

Standard construction uses 35-ft. poles with 7-in. tops, although a 6-in. top is permissible if the pole butts are treated by the penetration method. Crossarm framing is used with only one brace. Most of these lines are 13,200 volts Y, making it possible to use 7,620-volt, single-bushing transformers. Conductors are usually No. 6 copper, although some No. 6A Copperweld-copper has been used. All farmer-owned lines are connected to the company's lines through fused cutouts.

Since the farmers build their own lines the labor saving realized on long-span construction is of little importance. The extra cost of high-strength wire is more than the savings made in the fewer poles required.

COMPANY J:

Recent study has resulted in the adoption of the multi-grounded, common-neutral system. Poles are 35-ft., Class 4 cedar, untreated except when the use of preservative paste on the butts would indicate an economy. Conductors are generally No. 4 ACSR, although other types of equal strength and suitable conductivity may be used if a cost saving can be shown. Span lengths are up to 500 ft. The common neutral wire has at least four distributed grounds per mile, including transformer grounds and ties to uninsulated ground guys, but excluding grounds on customers wiring. The primary phase wire is carried on a pole-top pin insulator. The common neutral wire is carried on a spool-type insulator on the side of the pole except at guyed poles where an uninsulated attachment is used and bonded to the guy wire. Secondary wires are carried on spool-type insulators attached to the side of the pole. Single-bushing rural type transformers are used with primary cutout attached to the cover. Only a small amount of this type of line has been constructed to date but estimates indicate an over-all saving of 12 to 15 per cent when compared to the previous crossarm type of construction with standard equipment and without the common neutral. By installing all fixtures, including transformers, on the poles before raising them it is believed that some further savings can be made. In this case it would be necessary to climb the pole only once to tie in the conductors.

An inspection of the above reveals that longer spans with high-strength conductors comprise the general trend in reduced line costs. Only one of the reporting companies has abandoned the crossarm type in favor of the pole top common-neutral system and this is still on an experimental basis. A variety of conductor types is noted, with steel-core aluminum and hard-drawn copper predominating. The higher strength conductors used are at a sacrifice of conductivity, although this is apparently justified by the light loads served. The newer types of transformers appear to be receiving a fair trial. The tendency toward performing all pole work on the ground before raising the poles indicates further savings in labor costs as the work can be done faster and with lower cost labor.

Only experience over a considerable period of time can tell to what extent maintenance costs will affect the overall savings. However this development has had careful attention and it is reasonable to believe that progress is being made on a sound basis.

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Electrical Heating of Residences*

By H. V. CARPENTER
Dean, College of Mechanical Arts and Engineering, State College of Washington, Pullman, Wash.

A CAREFUL analysis of the growth of power consumption in the Northwest made by the United States Engineers in connection with their study of the Columbia River shows clearly that the power output of Grand Coulee and Bonneville will all be absorbed through normal growth by 1950. No one has been able to show why this is wrong, yet it is doubtful if anyone, even among power producers, believes it. The one load that could absorb the output of these plants is electrical heating, so that it was thought wise to study this load carefully.

Consultation with contractors at Grand Coulee showed the feasibility of heating Mason City electrically, and, from a physical standpoint at least, this has been done with complete success. The Engineering Experiment Station at the State College of Washington was able, through substantial cooperation of the M.W.A.K. Co., the Washington State Planning Council, and the W.P.A., to make a thorough study of conditions and to conduct an extensive series of tests.

Electrical heating has been studied and rejected in many cases because:

1. The rates must be lower than are usually thought justifiable in order to get the business in competition with fuel.

2. The load involves a great deal of responsibility since failure to serve in cold weather is very serious.

3. Peak demands are likely to show less diversity than in most other loads and are sure to show the least diversity in the coldest weather.

4. Coldest weather in most climates is a short period but considerably lower in temperature. This requires installed capacity to meet a peak lasting a very short period and occurring usually only once a year.

5 The heating season is such that a very poor load factor is certain.

6. The heating load might be so large as to require complete reconstruction of the distribution system and to render its diversity with other loads of little importance.

Outside of these shortcomings, electrical heating seems to be very desirable. Its attractiveness lies in its magnitude and in its desirability as seen by the user. The combined load of the average home would be increased by some five to twenty fold, depending on the ordinary consumption of the family, so that in spite of its low load factor, the kw.-hr. used by domestic consumers would reach a tremendous figure. This conclusion is arrived at by taking the present daily load factor of the average residential district to be

* A paper prepared for the Utilization Committee, Engineering and Operation Section, Northwest Electric Light & Power Assn., for presentation at the 1937 annual section meeting.

Table I—Heat Storage Characteristics

Materials	Specific Heat	Density	Useful Temp. Range	Voids	Useful Storage Per Cu.Ft. B.T.U.
Water	1	1	120 - 240	.2	6,000
Cast-iron	.127	7	165 - 500	.20	14,800
Granite	.2	2.65	165 - 500	.25	8,000
Brick	.22	2	165 - 500	.2	7,400
Concrete	.16	2.3	165 - 500	.2	6,200

.33 with an annual load factor of .25, and the load factor for heating a similar district of homes in the coldest weather to be .60 to .75 with an annual value of .25. This latter is made up of an individual load factor of .20 for the average home and a diversity of 1.25 among homes of the district, and a diversity of 1.4 to 1.8 between heating and the present load. Then, assuming that 25 per cent of the homes are electrically heated and that these homes use ten times the kw.-hr. for heating that they do for their ordinary demands, a 250 per cent increase in kw.-hr. sold is possible together with an increase in peak load of 200 to 225 per cent, with a resulting annual load factor of .28. Taking this view of it, the problem seems not quite so serious as it does at first thought. It can be shown easily, however, that in order for electric heating to be on a par with fuel in actual cost, it must be sold for 0.2c to 0.5c per kw.-hr., depending on the locality.

Drawbacks Analyzed

It is clear that the three greatest objections to electrical heating on the part of the service company are:

1. The high responsibility involved for continuity of service.
2. The poor load factor.
3. The low rate.

The first two items immediately classify the service as high priced, rather than as service that can be given at the lowest rate considered for such small blocks of power.

Experience in Tacoma has shown that, in spite of poorly developed and inefficient heating methods and cheap competitive fuel, it is possible to contract for a substantial percentage of electric heating load at 0.5c per kw-hr. This shows that it need not meet fuel competition since its freedom from dirt and ease of control make it very desirable to the homemaker.

Several years experience in Tacoma has changed their practice so that instead of urging that a customer heat his entire house electrically, they encourage him to use incidental heat, or at least to have a fuel reserve, such as a fireplace. With this understanding, the power company's problem is improved in two ways: (1) A small connected load is installed which decidedly improves the load factor; (2) the responsibility involved is greatly decreased. Reducing the connected load per residence in this way makes possible a much larger percentage of homes connected without overloading the system and insures continued use of the connected load for a substantial part of the year.

The city of Tacoma has conceived the rather unusual idea of making an extra charge for each kw. connected above a certain limit. This rather startling regulation will serve to keep the connected load within the limits of the distribution system if combined with a rate that will attract only a certain percentage of the total heating load. Since the Tacoma management has adopted this rate, it seems to be entirely unconcerned about the heating load, and, in fact, has no very definite knowledge or interest in its magnitude. A customer buys his heating current at the same rate that he pays for other uses, and uses his own judgment as to the amount to use. In the climate west of the Cascade Mountains, extremely low temperatures are not expected so that the connected load per residence can be considerably less than in other districts where short periods of very low temperature are expected each winter. It appears that in these low temperature districts, electric heating must be sold with the understanding that a fuel auxiliary of some sort is available.

Improving Load Factor

Studies of temperature records in the state of Washington indicate that, if a fuel auxiliary capable of caring for weather of greater than 40 deg. of temperature deficiency below 65 deg. F. is provided, electrical heat for the balance can be used quite continuously over about six months per year, and the fuel reserve will not ordinarily be used more than 5 to 30 days per year. With these provisions of fuel auxiliaries, the individual annual load factor of the average residence can be brought to about .35 with a connected requirement for the average six-room house of 12 to 15 kw. It would seem that this arrangement increases very materially the possibility of an economic basis for electric heating. The figures used above have been derived from the results of tests at Mason City and elsewhere, and are thought to be quite representative although the habits of families have been found to vary about as much in electric heating as in other respects.

In the hope that desirability and possibility might be brought still closer together, a considerable study was made at Mason City of the possibility of storing electrical heat. Storage offers the following possibilities:

1. The heaters may be operated on an off-peak basis which, even if the heating load becomes very much greater than any other, would still permit complete diversification among heat loads to avoid a heating peak and result in practically continuous demand.

2. One of the most frequently noted disadvantages of electrical heat by the user is the fact that he cannot afford sufficient connected load to warm up the house quickly in the morning. It has been shown that little heat is saved by cooling down a house during the night but a great majority of people prefer it for comfort and also believe they are saving heat. With a storage device properly built, it is possible to have a sufficient connected load to supply the heat for the day during an off-peak period of from 10 to 20 hours and to draw upon this heat at a greater rate during the morning warming-up period. This possibility adds very much to the attractiveness of electric heating from the customers' standpoint.

A smaller connected load with greater continuity of demand goes a long way toward removing the objections to this type of service on the part of the power company. This storage also removes the threat of trouble due to any reasonable interruptions of service.

Offsetting these advantages, is its additional first cost, itself partly offset by cheaper and centralized heating units in place of scattered direct heaters installed in the rooms. Also, there is additional complication and expense of control equipment, and a small loss from the storage unit.

Storage Methods

Storage units using water for storage have been tested many times, apparently with the idea that water having a high specific heat is the best medium for storage. Probably where a house is equipped with a hot water heating system, the hot water storage unit could be installed as effectively as any. The modern tendency, however, in residence heating is to use hot air with forced circulation. This has come in because of the cheaper first cost and continues in because of its easy adaptability to air conditioning. It was thought desirable on this account to study a type of storage well adapted to air heating. Some tests of dry storage have been made but no careful studies have been made. The physical data for a number of popular materials are as follows:

In the tests at Mason City granite storage was used made of granite boulders sized from 3 to 6 in. piled loosely in a cubical brick oven made of 4 in. of brick insulated with 3 in. of mineral wood, 4 in. hollow tile wall and an additional 3 in. of Unifil. The entire unit

contained 7,141 lb. of granite, 4,314 lb. of brick, about 500 lb. of clay, used as mortar in the brick, having a total useful storage capacity of 1,063,286 B.t.u., or 312 kw.-hr. This was more than sufficient for a full day's heating in the coldest weather.

Performance

This volume was found to be somewhat more than necessary for the house which was a Class B, Mason City house, 20x28 ft., one story, with full basement, the house being insulated, both walls and ceilings, with mineral wool. It was found to be quite difficult to get accurate data on the losses from the storage unit since a considerable part of the heat radiated to the basement by the unit was useful in warming the floor above. The actual radiation from the unit itself was about 2 kw. at 500 deg. but it was assumed that 75 per cent of this was useful in the basement and the rooms above. In handling the oven a duct system with a fan was installed by which air was drawn down from the rooms, part of it through the oven and part of it by-passed in order that air of proper temperature could be delivered to the rooms. The operation of the fan and of the mixing damper which control the by-pass was made automatic with thermostats so that the rooms could be held at a desired temperature. Hot air was taken from the top of the oven and some difficulty was experienced due to too much natural circulation when the fan was shut off.

Our suggestion for an improved design is to bring in cold air to the sides near the bottom of the storage space and withdraw hot air from the bottom center with the heating units installed at this exit point. Since the heat is transferred from the heater units to the boulders by natural convection and the highest temperatures are found in the middle of the mass, this arrangement of ducts reduces losses and makes it possible to draw heat direct from the heating coils without storage.

Stated above is the way in which the city of Tacoma has succeeded in limiting the maximum connected load in residences. The effect of this is, in brief, to require auxiliary fuel heat for cold spells and so to limit the annual peak to such a figure as will permit many hours use of the maximum connected kw. with a considerable increase in load factor and a decrease in distribution system expenses. This coupled with a rate that does not attract too large a percentage of business, together with the reduced responsibility, has removed house heating at Tacoma from the list of things to be worried about.

In the same way that load limitation has improved the annual load factor in Tacoma, the storage device just described serves to reduce the daily peak and increase diversity. A six-room house with 15 kw. of direct heating equipment would give trouble due to inability to warm up the house quickly in the morning. With storage equipment, heat can be transferred to the rooms at a rate considerably greater than 15 kw. (or more than double that if the time schedule permits the heating units to be on during the morning), and the heat stored gives the customer a feeling of independence and safety so far as power interruptions are concerned. From the power company's standpoint, the responsibility is much reduced, the connected load is much less than the possible rate of heat delivery, giving more satisfactory service, and the kw.-hr. can be distributed uniformly throughout each 24 hours.

Typical all-electric Mason City home

In Larger Homes

A six-room house of good construction but without unusual insulation could be heated up to a temperature deficiency of 40 deg. below 65 deg. F. with 200 to 250 kw.-hr. per day. A 10- to 12.5-kw. heating unit used with a heating schedule of 20 hours on and 4 hours off could supply this demand. Such an arrangement has then accomplished these things: a decrease of around 25 per cent of the installed kw. of heaters, a more complete release of the power company from responsibility due to interruptions, ability to give service in warming up the house at the equivalent of 1½ to 2½ times the connected kw., and an opportunity to secure as full diversity as may be desired, probably involving off-peak operation of a certain fraction of the heating load, thus securing as completely as possible a maximum kw.-hr. of heating load with a minimum increase in annual and daily demand. The daily load factor for any district would approach 100 per cent during the heating season and the combined load factor for all residence demands should reach an annual load factor of between 40 and 50 per cent.

If it were feasible to store enough heat to carry the unusual demand of a residence through the short periods of zero weather occurring in most northern climates, the storage could serve to reduce both the daily and the annual peaks but that is hardly possible. A storage for a two or three day period would not be unreasonable but cold snaps may last for two weeks or more.

By equipping a residence with both fuel reserve and an electrical storage unit, the family will be relieved of the trouble and dirt for most of the year and the load will become much more nearly a possibiity for the service company.

By using some of the new control devices whereby the power company can throw off a part of the storage heating units during peaks, the load factor on the district can be made close to 100 per cent and a substantial fraction of the homes heated electrically without rebuilding the distribution system. Judging from the experience with other household conveniences, a number of years would be required to secure more than 20 to 30 per cent of the business. It seems likely, therefore, that a rate could be established and methods worked out in practice whereby the demand for electrical heating could be met in such a way as to render valuable service to many customers and yet pay its own way with the service company.

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Report on Weathering of Socket Meters*

By JULIUS KLOSE
Pacific Gas & Electric Co.

To determine the performance of socket-type meters when subjected to exposure and to gain some idea of the effect of dryness and moisture on the bearings, a brief field check was made on installations that had been in service some time. Fourteen meters in Hillsboro, Burlingame, San Mateo, Half Moon Bay, Redwood City and the vicinity were tested. Eleven of these were within 1½ per cent of unity and the bearings and other internal parts were in perfect condition. Three showed correction factors of 1.034 to 1.118. Two of these had rusty balls and rough jewels although the top bearings and other parts were in good condition.

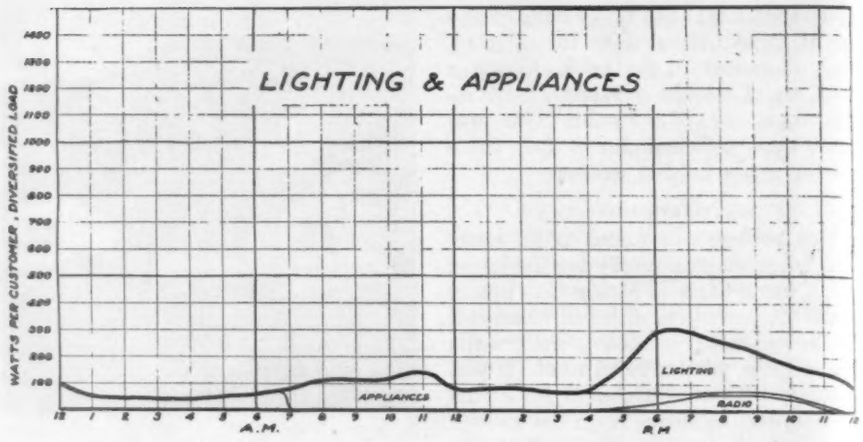
Meters in the fog area apparently indicate that moisture has an effect on pivots and balls, which, after rusting, start to grind the jewel into rouge. One meter had a rusty pivot and an extremely bad jewel. In considering rust,

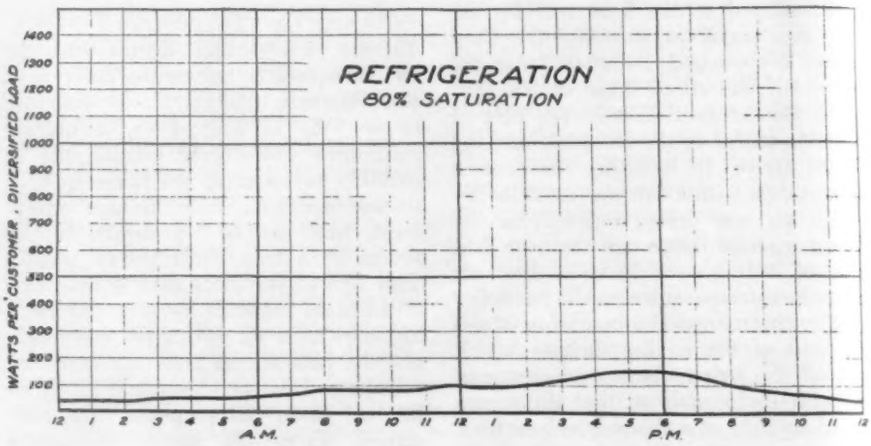
*P.C.E.A. Metering Sub-Committee report.

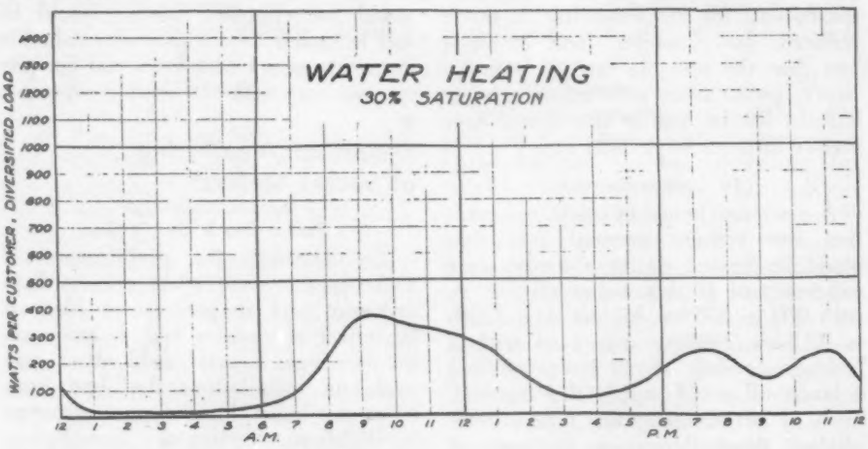
it is questionable whether or not the steel had oil applied at the time the jewels and parts were assembled at the factory or whether they were imporperly handled so as to wipe off the oil film.

In the Santa Clara valley from Mountain View to several miles south of San Jose where high temperatures prevail, twenty meters were tested. Of these only one meter was more than one per cent in error due to gummy oil on the jewel and pivot. Otherwise its condition was excellent. This however, indicates that in the dry, warm climates, the socket type meters may absorb sufficient heat to affect the oil used on the jewels. As a coincidence, over 65 per cent of the meters were installed on the western exposure of the houses. The remainder were well distributed over the three remaining exposures. Data on performance of meters in the San Joaquin valley after one or two years operation will be of interest and might be an appropriate topic for a future meeting of the Metering Sub-committee.

The increasing use of the new sequence metering merits continued and continuous study on the part of every meterman to insure maximum economy both in the original application and in minimum attention and maintenance afterwards.







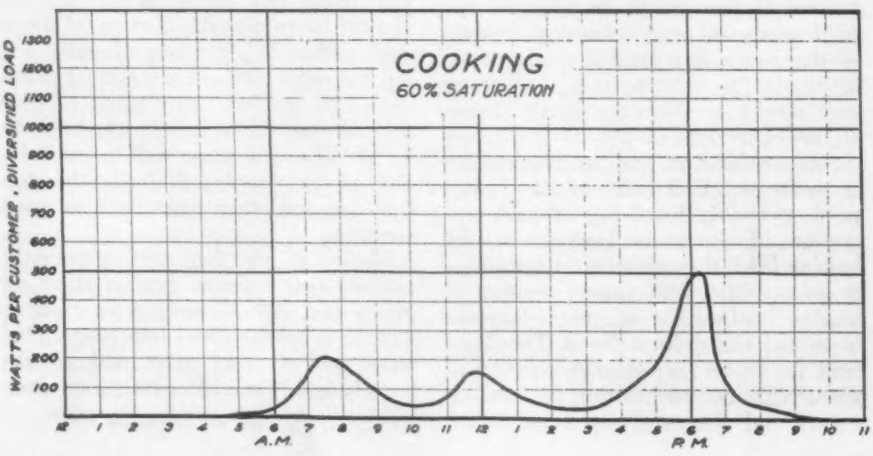


Fig. 1 (at top) shows lighting and small appliances; actually it is a composite of separate curves; ironers, washers and vacuum cleaners account for most of the daytime portion

Fig. 2 shows that the refrigeration load is highest before mealtime; saturation in some areas is so near 100 per cent that replacements with new low-consumption models is tending to decrease the load

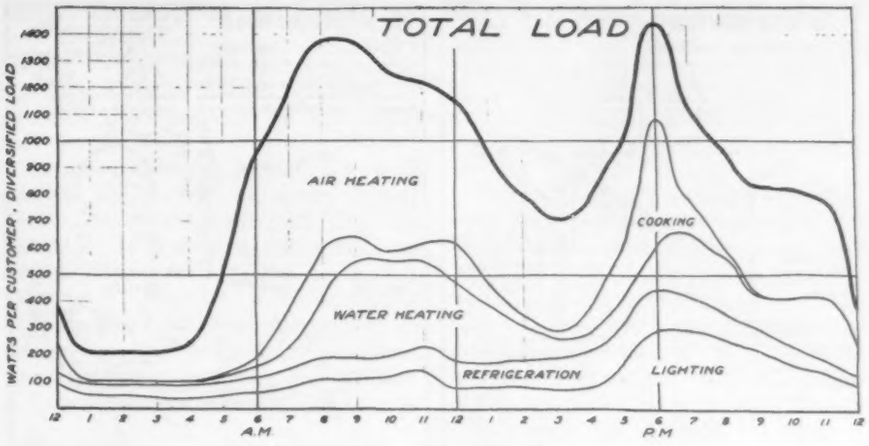
Fig. 3 shows the water heating morning peak, which occurs on Monday; load-building potentialities are great, even at low saturation, because consumption per customer is 6 to 10 times that for lighting

Fig. 4 is the cooking curve; offsetting its undesirable shape are the facts that it often draws a higher rating than water heating, can be used to introduce other major appliances

Fig. 5 (opposite) indicates that the automatic major air heating load is low at the lighting peak; non-automatic heating is entirely different, the demand remaining near peak value until late in the evening

Fig. 6 (top of opposite page) shows the total load curve obtained by superimposing the curves in Figs. 1 to 5; note the appearance of two almost equal peaks

Total Load Curve Formed by Superimposing Individual Curves Shows How One Type of Load Complements Another to Raise Annual Domestic Load Factor



Domestic Loads and Annual Load Factor*

By FRED R. GROCH
Wesix, Inc., San Francisco

Those following the survey of range and water-heater selling, beginning on page 61 of this issue, will especially be interested in the load curves for those appliances, shown here. Inspection will reveal why utilities would like to install both at once—because the peak demand of one occurs at an hour when the demand of the other is low.

THE most desirable domestic load, from the utility man's viewpoint, is the load most economical to serve. The measure of economy to serve is the annual load factor, since the higher the load factor, the more kw.-hr. per kw. of peak demand. Much is known about the performance of each type of appliance, but little has been done to gage its effect on the system as a whole, and to compare directly the load characteristics of the various appliances.

This study shows, by means of daily load curves and annual kw.-hr. consumption, the effect of each type of domestic appliance on the load of an entire domestic area. Off-peak control is not considered as its use is complicated by questions of cost and public relations.

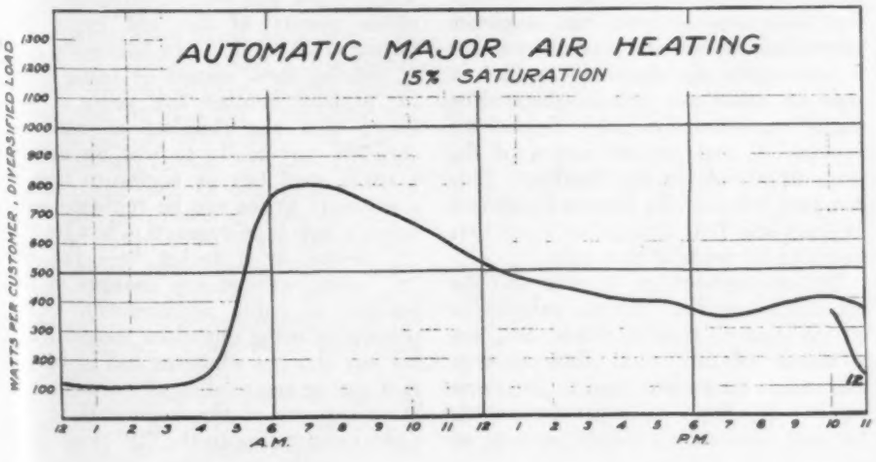
Figures 1 to 5 are typical diversified daily load curves for the principal types of domestic load. Each is expressed in watts per customer, based on the diversified load of a large number of customers, and is the average load per customer for a large domestic area. Load per customer is used, instead of total system load, in order easily to obtain annual load factor from peak demand per average customer and average annual kw.-hr. per customer.

The load curves shown are for the peak day in the year, since annual load factor is based on the peak demand for the year.

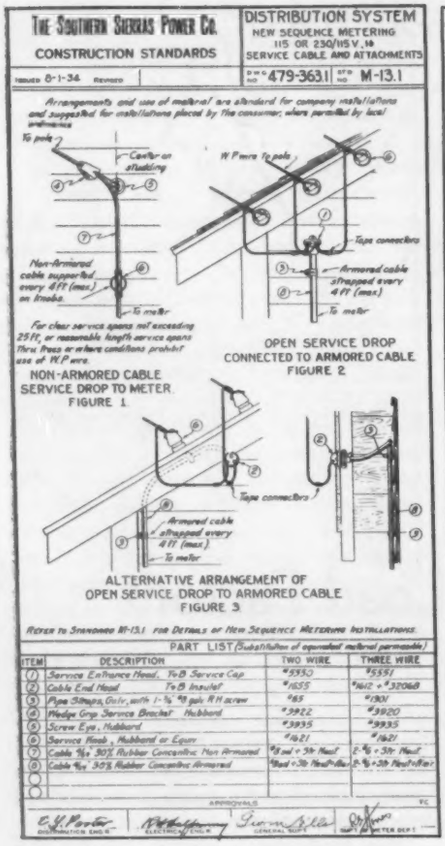
Data for construction of the curves was obtained from several sources. Curves vary somewhat for different localities, depending on climatic conditions and habits of use of appliances, but, in general, the difference in shape and peak of the diversified load curve is too small to affect the results of this study.

Each curve represents the diversified load of a large number of customers. Individual appliance loads vary widely as to time of use, but as the number of appliances is increased the curve assumes the characteristic shape shown for each type.

At the top of the page is the total of all load shown on the other five charts. Instead of having just an evening peak we have two. An examination of the proportion of each load making up each peak reveals the value of each type of load. Without water heating and air heating, cooking would add disproportionately to the peak, which would be in the evening only. With the balanced load condition shown, cooking is a valuable part of the total load, since it raises the evening load which would otherwise be low.



* Report prepared by the author for the Operating-Economics Section, Pacific Coast Electrical Association.


THE SOUTHERN SIERRAS POWER CO.
CONSTRUCTION STANDARDS
DISTRIBUTION SYSTEM
NEW SEQUENCE METERING
115 OR 230/115 V. 1Φ
SERVICE CABLE AND ATTACHMENTS
ISSUED 8-1-34 REVISED
DWG. NO. 479-363.1 STD. NO. M-13.1

Arrangements and use of material are standard for company installations and suggested for installations placed by the consumer; where permitted by local ordinance

To pole
Center on studding
W.P. wire to pole
Tape connectors
Non-Armored cable supported every 4 Ft (max.) on knobs
Armored cable strapped every 4 Ft (max.)
To meter
For clear service spans not exceeding 25 Ft. or reasonable length service spans where trees or other conditions prohibit use of W.P. wire.

NON-ARMORED CABLE SERVICE DROP TO METER
FIGURE 1.

OPEN SERVICE DROP CONNECTED TO ARMORED CABLE
FIGURE 2.

Armored cable strapped every 4 Ft (max.)
To meter

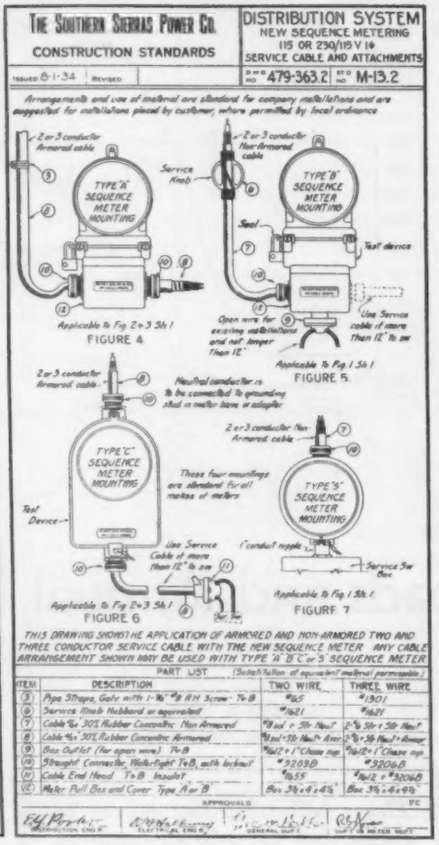
ALTERNATIVE ARRANGEMENT OF OPEN SERVICE DROP TO ARMORED CABLE
FIGURE 3.

Refer to Standard M-13.1 for Details of New Sequence Metering Installations.

PART LIST (Substitution of equivalent material permissable)

ITEM	DESCRIPTION	TWO WIRE	THREE WIRE
(1)	Service Entrance Head, Type B Service Cap	#3950	#5551
(2)	Cable End Head Type B Insulet	#1655	#1612 + #32068
(3)	Pipe Straps, Galv. with 1-¾" #9 galv. R.H. screw	#65	#1301
(4)	Wedge Grip Service Bracket Hubbard	#3922	#3920
(5)	Screw Eye, Hubbard	#3935	#3935
(6)	Service Knob, Hubbard or Equiv	#1621	#1621
(7)	Cable ¾" x 30% Rubber Concentric Non Armored	#3 and 1-5th Neut	2-¾ + 5th Neut
(8)	Cable ¾" x 30% Rubber Concentric Armored	#3and 1-5th Neut+Arm	2-¾ + 5th Neut+Arm

APPROVALS


THE SOUTHERN SIERRAS POWER CO.
CONSTRUCTION STANDARDS
DISTRIBUTION SYSTEM
NEW SEQUENCE METERING
115 OR 230/115 V. 1Φ
SERVICE CABLE AND ATTACHMENTS
ISSUED 8-1-34 REVISED
DWG. NO. 479-363.2 STD. NO. M-13.2

Arrangements and use of material are standard for company installations and are suggested for installations placed by customer; where permitted by local ordinance

2 or 3 conductor Armored cable
TYPE "A" SEQUENCE METER MOUNTING
Service Knob
2 or 3 conductor Non-Armored cable
TYPE "B" SEQUENCE METER MOUNTING
Seal
Test device
Open wire for existing installations and not longer than 12"
Use Service cable of more than 12" to am
Applicable to Fig. 2 or 3 Sh 1

FIGURE 4.

Applicable to Fig. 1 Sh 1

FIGURE 5.

2 or 3 conductor Armored cable
Neutral conductor is to be connected to grounding stud in meter base or adapter
TYPE "C" SEQUENCE METER MOUNTING
Those four mountings are standard for all makes of meters
Test Device
Use Service Cable of more than 12" to am
Applicable to Fig. 2 or 3 Sh 1

FIGURE 6.

2 or 3 conductor Non-Armored cable
TYPE "S" SEQUENCE METER MOUNTING
Conduit nipple
Service Sw Box
Applicable to Fig. 1 Sh 1

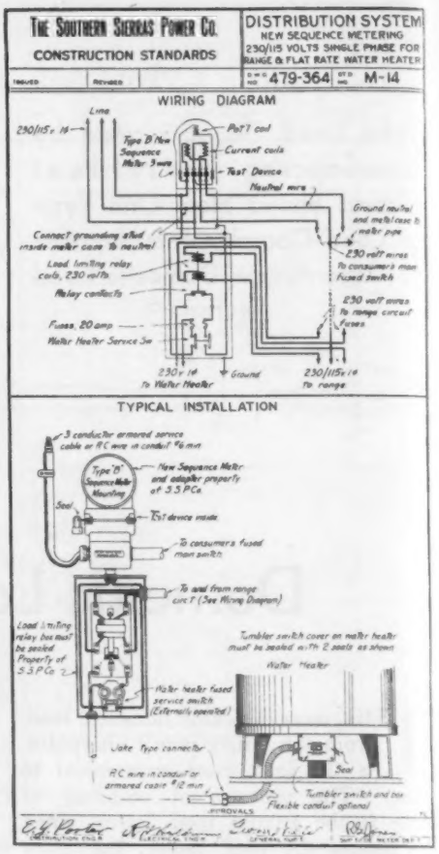
FIGURE 7

THIS DRAWING SHOWS THE APPLICATION OF ARMORED AND NON-ARMORED TWO AND THREE CONDUCTOR SERVICE CABLE WITH THE NEW SEQUENCE METER. ANY CABLE ARRANGEMENT SHOWN MAY BE USED WITH TYPE "A" "B" OR "S" SEQUENCE METER

PART LIST (Substitution of equivalent material permissable)

ITEM	DESCRIPTION	TWO WIRE	THREE WIRE
(3)	Pipe Straps, Galv. with 1-¾" #9 R.H. Screw - Type B	#65	#1301
(6)	Service Knob Hubbard or equivalent	#1621	#1621
(7)	Cable ¾" x 30% Rubber Concentric Non Armored	#3 and 1-5th Neut	2-¾ 5th + 5th Neut
(8)	Cable ¾" x 30% Rubber Concentric Armored	#3 and 1-5th Neut+Arm	2-¾ 5th + 5th Neut + Armor
(9)	Box Outlet (for open wire) Type B	#1612 + 1 Chase nip	2-#1612 + 1 Chase nip
(10)	Straight Connector, Watertight Type B, with locknut	#32090	#32068
(11)	Cable End Head Type B Insulet	#1655	#1612 + #32068
(12)	Meter Pull Box and Cover Type A or B	Box 3¾ x 6 x 4½	Box 3¾ x 6 x 4½

APPROVALS


THE SOUTHERN SIERRAS POWER CO.
CONSTRUCTION STANDARDS
DISTRIBUTION SYSTEM
NEW SEQUENCE METERING
230/115 VOLTS SINGLE PHASE FOR RANGE & FLAT RATE WATER HEATER
ISSUED REVISED
DWG. NO. 479-364 STD. NO. M-14

WIRING DIAGRAM

230/115 v. 1Φ
Line
Type B New Sequence Meter 3 wire
Pot'l coil
Current coils
Test Device
Neutral wire
Ground neutral and metal case to meter pipe
Connect grounding stud inside meter case to neutral
230 volt wires to consumer's main fused switch
Load limiting relay coils, 230 volts
Relay contacts
230 volt wires to range circuit Fuses
Fuses, 20 amp
Water Heater Service Sw
230 v. 1Φ To Water Heater
Ground
230/115 v. 1Φ To range

TYPICAL INSTALLATION

3 conductor armored service cable or R.C. wire in conduit ¾" min
Type "B" Sequence Meter Mounting
New Sequence Meter and adapter properly at 3.5 P.C.s
Seal
Test device inside
To consumer's fused main switch
To and from range circ't (See Wiring Diagram)
Load limiting relay box must be sealed Property of S.S.P.Co.
Tumbler switch cover on water heater must be sealed with 2 seals as shown
Water Heater
Water heater fused service switch (Externally operated)
Water Type connector
R.C. wire in conduit or armored cable ½" min
Tumbler switch and box
Flexible conduit optional

Standards for new sequence installations of the Nevada-California Electric Corp. Left—Method of transition from service drop to cable. Center—Arrangement of meter installation showing fittings used in armored and non-armored cable jobs. Right—Typical water-heater service using armored cable and new sequence installations.

Economy, the Goal of Sequence Change*

By R. G. JONES
Supt. of Meter Department
Nevada-California Electric Corp.

PROBABLY the greatest confusion in the electrical industry during the past generation was that occasioned four years ago by the enormous increase in current theft. Since everyone is conversant with the conditions which brought about this failure of public morale, these will not be discussed.

This new public attitude, however, led to a complete change in the construction and arrangement of services to consumers' premises and forced the adoption of iron-clad installations—a desirable condition to which the industry had long looked forward. Although there was no choice in the matter, the change came when materials and supplies were at their lowest cost, so that the price paid, despite the confusion, possibly was lower than that which would have accompanied a more orderly change at a time of higher costs.

The Nevada California Electric Corp. entered this new era of services and meters with considerable trepidation. Sensing the rapid change in devices to meet new conditions, the company placed few of the early devices on the system. Having used armored concentric cable in certain types of construction, the company quickly saw its advantages when applied to the devices that were used with the new sequence adaptation of conventional meters.

Apparently the demand for such a type of cable was encouraging. The manufacturers immediately began improving it, and several makes of fittings appeared on the market. This company adopted the Crouse-Hinds and Thomas and Betz fittings as being best suited to its needs at that time.

The arrangement of services and the necessary switches, meters, relays for circuit control, time switches, etc., are a matter of individual determination and cannot be standardized to any great extent. If wiring rules can be written for and enforced by county as well as city inspectors, there is a fairly good chance of getting some standards for general arrangement.

The types and sizes of meters used by various companies along with their service rules will always determine the kind of iron-clad metering jobs that they will adopt as a standard. This company had, through changes in rate structure and competition, some 700 single phase and several hundred polyphase meters of the old types returned from service. In balancing cost of retiring these meters or using them for at least another five years it was found that the simplest as well as cheapest way to do so was by use of a small steel box or enclosure that if a necessity arises can be replaced with either a new type connection box for the "A" meter or a socket base for the "S" meter, without any changes in the conduit or cable arrangement. This permits of using our older meters without any changes whatever and in future they can be replaced as above described at an expense of about one-half of the cost of converting to the "S" type. This

*P.C.E.A. Metering Sub-Committee report.

will permit of retiring these meters after three years at a balanced cost against new meters to be purchased at that interval.

The mere fact that each company has different ideas in the matter of services and meter types or styles is a valuable factor in future determination as to the desirability of standardizing on a scheme of arrangements for services and devices. The manufacturers have gone about as far as they can in aiding in the final solution of types and sizes of meters as well as arrangement of devices to make them iron-clad or theft proof. The cables, conduit, and fittings are about all that can be desired so at present it looks as though the only thing that remains to create service standards, if there is a need for them, is the companies to coordinate their ideas.

Standard sheets as furnished servicemen of the Nevada-California Electric Corp. and covering the period of development in this company's meter and service work are illustrated herewith.

Study or analysis of service rules and standards of other companies in this group will help to bring about simplification of materials and arrangements of customers' services.

Vacuum Tubes in Action

V—Photo-electric Application

By H. C. STANLEY
Asst. Engineer, General Electric Co.,
San Francisco, Calif.

SOME of the common applications of photo-electric relays are as follows: Counting; control of street lights, signs and lights; doors; limit switches, and burglar alarms.

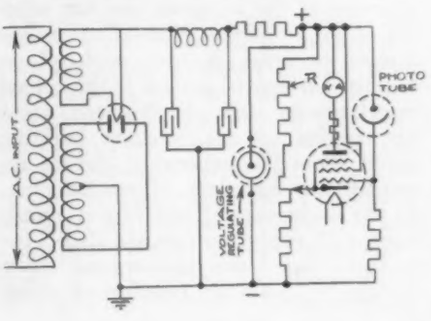
In these applications a simple type of photo-electric relay will do the trick. There are other applications that require special arrangement, some of which are of considerable interest. Space will not permit a full description but an attempt will be made to expose the vital elements of their mysterious workings.

The photo-electric pyrometer has become a most valuable tool in steel mills and other industrial plants, where accurate indication and recording of temperature is of importance. This pyrometer is based on the fact that the photo-tube is sensitive to radiant energy emanating from heated solids. The fact that a change in temperature of the heated body, produces a very much greater change in radiant energy gives the photo-tube a fine opportunity to do its stuff. That is not all, the photo-electric current, after being amplified sufficiently to produce a few milliamperes for the indicating or recording instruments, can be used for controlling the grids of gaseous tubes, which tubes will pass sufficient current to operate signaling devices, such as semaphores.

A constant source of direct current is essential in order to obtain accurate indication of temperature. This direct current can be obtained by means of a small rectifier tube but inasmuch as the direct current voltage will vary with the alternating current voltage, a voltage regulating tube is brought into use as shown in the accompanying sketch. This is a very simple type of tube, having two electrodes but no filament. The operation is similar to that of the low voltage neon lamp commonly used as a pilot lamp. No current will pass through this tube until a voltage is impressed across the terminals sufficient to ionize the gas. For any particular tube this ionizing potential has a very definite value. If this value is 125 volts, the voltage drop across the tube will drop to some lower value, such as 90 volts, after current starts to flow. This voltage drop is constant over quite a wide range in current, so that it is only necessary to insert the proper value of resistance in series with the tube, to keep the current within the constant voltage range.

Pyrometer Circuit

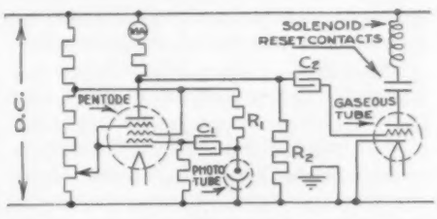
Flow of current in the milliammeter can be adjusted by biasing the cathode potential. The voltage on the control grid of the pentode will vary as the photo-tube current varies. A pentode is used for the amplifier, as it is less sensitive to changes in plate voltage. The pentode has 3 grids. The shield grid is shown connected to the cathode and the screen grid to the positive supply. The current in the milliammeter will vary exactly as the photo-tube current varies, and accordingly is a definite indication of the temperature of the steel. An instrument calibrated in terms of temperature can be connected in series with the milliammeter, so that temperature can be read directly. From some point in resistor R, connection can be made to the grid of a gaseous tube, the output of which is sufficient to operate mechanical devices such as semaphores.



The photo-tube is mounted a few feet away from the conveyor and scans the hot billet through a suitable optical system. When the billet passes into the scanning position, the response of the photo-electric pyrometer is instantaneous, as contrasted with time necessary to take observations with an optical pyrometer such as is ordinarily used to determine temperatures of hot steel.

Photo-electric control has proven of great value in paper wrapping machines. A typical example is the machine used for applying cellophane wrappers to bars of soap. Inasmuch as the wrapper carries printed matter, it is essential that the cellaphane be fed from its roll at such a speed that the printed matter will appear at the correct position on the cakes of soap. A photo-electric tube is mounted inside a revolving metal tube. This metal tube has a narrow slot through which a beam of light can strike the photo-tube at a certain point in each revloution of the metal tube. The cellophane wrapper is fed over this metal tube and is arranged so that a certain portion of the printed matter covers the slot when it comes in line with the beam of light. However, the wrapper feed is purposely slowed up so that the printed matter gradually lags behind until it no longer interrupts the beam of light, thus permitting the light to reach the photo-tube. The photo-tube circuit immediately acts to operate a solenoid which advances the wrapper feed to the correct position. This photo-electric response is exceedingly rapid, and will respond to light flashes of one ten-thousandth of a second in duration.

The circuit employed is of interest, both as to its speed and to the fact that it acts upon sudden changes in light. The current in the plate circuit of the pentode is adjusted by cathode bias. The amount of current in the photo-tube has no effect as the control grid of the pentode is coupled to the photo-tube



circuit through a capacitor, and this grid will always be at ground potential for any steady light value. If the light on the photo-tube is suddenly increased the voltage drop across R_1 will increase. This results in a discharge of capacator C; which momentarily makes the voltage of the control grid more negative, thus lowering the plate current. This sudden decrease in plate current raises the voltage of the grid of the gaseous tube through capacitor C_2. This tube fires and operates the solenoid. The solenoid circuit is opened by the mechanically operated reset contacts, and everything is back to normal and ready for the next shot. It would seem difficult to obtain this amazing control by any other means, and accordingly, this application is a good example of the marvels that can be accomplished by photo-electric control.

Low Cost Air Treating For Rural Homes*

By F. A. BROOKS
Assoc. Agricultural Engineer, California Agricultural Experiment Station, Davis

PROBABLY the main reason California home owners are not willing at present to pay the price required for reasonably complete air-conditioning is that although our summer days are hot one can usually sleep comfortably at night (which is not possible in the East during hot spells). However, the general public now knows that air can be cooled and there is a demand for cheap direct evaporative coolers in spite of the higher humidity of air discharged from them.

As a consequence, desert or "Arizona" coolers are being installed in the southwest by the thousands. John J. Mangel of the Southern Sierras Power Co. reports 1,000 hp. in ⅛ to ½ hp. fan motors coming onto their lines in 18 months entirely unsolicited and he expects another 2,000 hp. for this purpose from the area extending from Palm Springs, Indio, and Blythe to the east, and south to the Mexican border. Usage in this area indicates a potential demand more than ten times as great in the San Joaquin and Sacramento Valleys where the drier mid-summer atmosphere is more favorable to the operation of direct evaporative coolers.

These coolers are nothing but a wet air filter and a powerful ventilating fan. Their prototype is the wet straw pile of the Indians. The disadvantage of high humidity in the cooled air is counteracted by the strong breeze of the electric fan (often an automobile radiator fan on a ¼-hp. motor). In fact manufacturers of these boxes capitalize on the dampness by using trade names such as Sno-breeze and Ocean breeze. High humidity in air distinctly below body temperature is only a minor evil in contrast to discomfort of the general atmosphere at a temperature from 110 to 120 deg. F. Anything that brings such an air temperature below body temperature is a blessing and since this improvement can be had from home-made apparatus costing about 1/50 as much as mechanical refrigeration it is no wonder that the simple evaporative coolers have suddenly appeared by the thousands.

Air Source

Considering now the simplest means of obtaining partial comfort in hot weather for a minimum cost there are a few general principles of ventilation and insulation that can be used to advantage in almost every house. The first is that the air to be used in summer should be drawn from the coolest and driest place, usually under the house. Typical cellar temperatures in Davis are about 75 deg. F. even on hot days. The ground and concrete walls have relatively large heat capacities and considerable area so that the living room which might go to 93 deg. F. can be kept below 85 deg. F. simply by blowing in the cellar air. To conserve the cool cellar air the blower should not be started till after lunch.

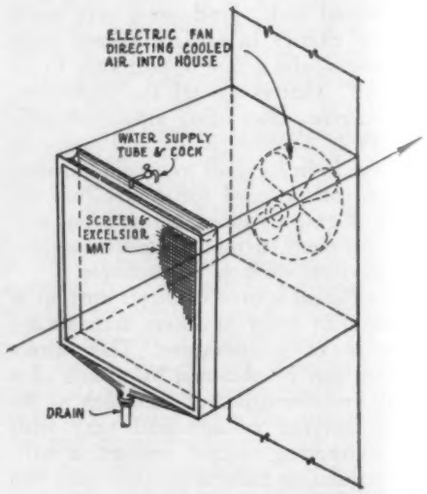
One of the important uses of a forced ventilating system is to provide night cooling. Here at Davis we have low air temperatures during the summer night, which for six hours remain on the average of at least 30 deg. F. below the daily maximum. The ordinary frame house in rural surroundings is too cold for comfort early in the morning if the windows are left open all night. Adobe houses or frame houses in cities do not cool off so readily but can be cooled if the forced ventilation is used. In Stockton, night air cooling of one concrete building saved about 90 per cent of the ice required for complete air-conditioning. In the early evening the forced ventilation with cooler outside air also helps to bring the house temperature down rapidly so that early bed-time of children need not be delayed. Night use of fans or blowers requires special attention to the elimination of noise. Theoretically, the multivane blower can be made more quiet than the propeller fan, but noisy designs are common and installations of piping often faulty so that unless considerable care is exercised it may be found impossible to sleep while the system is running.

Ventilation for Comfort

The second simple and useful principle of ventilation is that bodily comfort in hot weather is greatly improved by strong air motion if the temperature is below 100 deg. F. The local spasmodic blasts from desk fans give some sense of comfort but these are relatively ineffective in comparison with a general wind which can be induced by powerful exhausters. However, some precautions must be taken when near the port supplying cool air, because many persons cannot sit or sleep in a direct air blast without catching serious colds. The average skin temperature of a healthy person is about 92 deg. F. but high velocity air will reduce this nearly to the wet-bulb air temperature which if below 70 deg. F. creates a feeling of draftiness or chill.

Insulation Important

The third general principle in gaining summer comfort, which is sometimes more important than forced air flow, is that of keeping temperatures down by decreasing the inflow of heat. Experiment Station Bulletin 589 shows that in the ordinary single-story bungalow about 40 per cent of the best heat



Plan of a simple type of "desert cooler"

* Extracts from a paper before the Rural Electric Conference, Davis, Calif., Jan. 11, 1937.

comes in through the roof and another 15 per cent through unshaded windows. Installation of thermal insulation in the attic usually is simple in single-storied houses and costs $60 to $75 for the ordinary 5- or 6-room cottage. Redwood bark fiber, diatomaceous earth, processed rice hulls, etc., are in common use but should never be allowed near electric wires because of the danger of short circuit when wet. Glass wool batting 2 in. thick can now be had for 5 cents per square foot installed. (The workmen complain of sore arms from glass splinters though the bat feels very soft.) Aluminum foil insulation of equal thermal resistance is more expensive. Rigid insulation of cane fiber, such as Celotex, is in general use in new house construction for plaster backing but at 4½ cents per square foot for 7/16 in. thickness is much more expensive as an insulator than the loose fill or bat materials.

In general, it might be said that all one-story houses should have ceiling insulation and every house a forced ventilation system, and that the cost of these two fundamental aids to summer comfort is usually within the means of the home owner.

Evaporative Cooling

Considering now the problems of evaporative cooling, the ordinary desert cooler previously mentioned is a simple example. A filter of excelsior is kept wet by the drip from a perforated pan which is supplied by water from household service through a bleeder valve. Water dripping from the bottom is usually carried by trough to some garden shrub. The excelsior rots if allowed to dry out and frequent renewals are made because of the odor due to algae or to the decaying excelsior. Turpentine is sometimes added to the water to remove the odor and some efforts are being made to find a mineral suitable for a permanent wet surface which can be treated with copper sulphate.

The area of the wet filter should be large enough, according to Mr. Mangel, to keep the air velocity through the filter below 200 ft. per min., and to furnish one air change every three minutes throughout the spaces treated. The continual supply of new air is essential to prevent the humidity from building up to the "clammy" point. The fan ordinarily is placed in the cooler box, but an exhauster can be used instead to discharge the air from the room if all other openings are closed. An excellent installation is to be found at the radio broadcasting room in El Centro where the evaporative cooler is in the door at one end and an exhaust fan in the window at the other end. A strong current through the whole room is thus produced which is well liked.

The evaporative cooler must be shaded at all times and placed so that the air will flow directly through the cooler and the rooms to be treated and discharged at the far end. If more than one room is to be cooled, probably two fans should be used—one at the cooler and one exhausting—in order to insure through flow in spite of leaks through chimneys and cracks and around door and window openings. The most efficient installation would draw

A "desert cooler" installation of the simplest type in a rural home in southern California

air into the evaporative cooler from the cellar, and discharge the room air into the attic to cool the attic, provided the gable ends are open so that the air flow through the living quarters is not obstructed.

Indirect Cooling

When the humidity resulting from direct evaporative coolers is too high for comfort the indirect evaporative cooler can be used in which the room air supply is kept separate from the sprayed air but cooled by it in a heat exchanger. Another popular method of avoiding high humidity is to use a "dry air cooler" which is simply an indirect cooler in which the treated air does not come in direct contact with the liquid cooling medium. Large use is made in the Chico area of cold well water for dry air cooling and the water discharged from all types of air-conditioning equipment overloaded the sewer system last summer and has done considerable damage to foundations. Water use can be reduced by recirculating the water through spray cooling towers and this practice may become general because authorities have pointed out that "unless other means of cooling are provided, the use of water by air-conditioning plants will shortly become so tremendous, no city will be able to provide sufficient water supply."

Cooling of air by ice is an economical practice, when there are only a few days in the year requiring refrigeration in addition to proper ventilation. Here in Davis we have only four or five very hot spells per summer and a proper ice box in connection with a forced ventilating system would give adequate comfort for most persons at low cost. Smaller units are also in use in which ice water is pumped through a finned coil provided with a fan to give forced air cooling. A more simple system is possible by blowing the air to be cooled directly against the ice. The ice surface temperature causes some drying of the air so in this case partial recirculation of the room air is often possible without producing high humidity conditions.

Humidity Control

If the humidity of the dry-cooled air is still too high for comfort and it is desired to avoid refrigeration, it is now practical to use an adsorbent drier such as silical gel. This process makes use of the sub-microscopic pores of silica gel to catch moisture by differential vapor pressure, but requires reactivitation periodically by heat. A typical installation includes two silica-gel chambers through which is passed alternately the air to be dried, and the diluted hot products of heater flame which drives out the moisture previously caught. Because of the liberation of latent heat of the water vapor the air being dried leaves the silica-gel dehumidifier at a high temperature. The cooling of the dry air can then be accomplished by a dry cooler using well water or water circulated through a spray tower.

Considering air conditioning as a whole it seems evident that the public expects full air conditioning in public places but that the average individual home owner finds the complete house conditioning system too expensive at present. Partial comfort can be obtained in ordinary dwellings at low cost by installing a forced ventilating system and thermal insulation. Direct evaporative coolers are successful over large areas in southwest and in the interior valleys of the coast states. The several thousand "desert" coolers now in use are mostly homemade copies of original designs and a great increase is expected when the general principles and specifications become generally known.

Trade Associations

IDEAS AND PLANS WHICH WELD THE INDUSTRY INTO A UNITED ATTACK ON PROBLEMS IN TRADE RELATIONS AND BUSINESS ETHICS

At Last — A Wiring Standard Agreed to by All Groups

A "HANDBOOK of Interior Wiring Design", produced after months of deliberation by some of the best minds in the several branches of the electrical industry, and awaited by the entire industry, is at last an accomplished fact. Prepared with painstaking effort by members of a joint committee under the chairmanship of E. A. Brand, Niagara-Hudson Power Co., Buffalo, N. Y., the work is a monument to the cooperative spirit within the industry, and meets a long-felt want in dealing with the problem of inadequacy in capacity and the handicap it places on electrical progress.

Action looking toward the preparation of the handbook originated with the Sales Committee of the Edison Electric Institute in June, 1935, when Mr. Brand, representing the Institute's Wiring Committee, was asked to organize a Joint Committee to undertake the task. Arthur Abbott came West for consultations on the detailed interests of this area.

The "Handbook" contains specifications, details and plans of complete wiring design, developed to meet increased electrical demands of the present and future. It is being released nationally under the sponsorship of the entire electrical industry. Every person identified in any way with electrical interests will be at once impressed with the tremendous potentialities in electrical development which it suggests.

Every type of interior wiring design has been informatively treated in the subject matter. Tables of data, diagrams, check lists, sample specifications and contract forms, essential surveys, practical design data, terminology and miscellaneous facts are presented with clarity and precision.

Residence Wiring is covered in Section 1, in Subdivisions of General Analysis, Standards of Adequacy, Chart of Outlet Requirements, Specification form and Sample Specification. This section includes a thorough survey of residence wiring, and adds electrical requirements of each room, a check list for quick reference and a specification form which is basic in character. Increasing demands on residential wiring and the trend toward greater convenience are emphasized.

Section 2, "The Wiring of General Occupancies and the Advantages of Adequate Wiring" contains a study of the technical advantages of adequate wiring, with reference to the operation of equipment, overall economics, and the problems of continued modernization. Section 3 is devoted to lighting fundamentals, and will be of special interest to the utility man who requires a working knowledge of every angle of consumer interest.

"Wiring Standards for General Occupancies," Section 4, includes design standards for multi-family dwellings, commercial, industrial and public buildings, and power wiring. Standards of outlets, switch control, circuiting, panel board, feeder and service entrance design for general occupancies are followed by a discussion of the conditions of power wiring adequacy for these occupancies. Here is a representative picture of what is being used today and what must be made available if the industry is to meet the ever-increasing electrical demands.

Section 5 outlines procedure in design, and provides a practical addition to the individual standards of Section 4. Typical sample problems in wiring layout form the basis of specific designs. Contracts and Specifications, in Section 6, conclude the manual, and add both general information on the preparation of contracts and specifications and a survey of phases which should be examined and checked in every installation.

Efforts to raise the whole level of the industry and to eliminate unsound and uninformed bidding methods will be distinctly served in the practical use of this book. Utility men, manufacturers, dealers, contractors, builders and architects who are interested in better-satisfied customers and who want them to receive the most for their electrical expenditure in convenience, economy, comfort, labor-saving and safety in the home and business will receive the book with enthusiasm.

Nation-wide acceptance of this standard of interior wiring design will go far toward getting rid of the bottle-neck of inadequate wiring which today limits the industry. The book should prove a useful tool in any local wiring promotion campaign, in fact a campaign can be built around it as a recommended standard.

The "Handbook of Interior Wiring Design" is the only book of its kind which bears the approval of the entire electrical industry. In joint sponsorship with Edison Institute are the Artistic Lighting Equipment Association, Illuminating Engineering Society, International Association of Electrical Inspectors, National Electrical Contractors Association, National Electrical Manufacturers Association, National Electrical Wholesalers Association and the Radio Manufacturers Association.

Frank Talcott shows how lighting cost savings will buy new equipment (above), and Dick Stevens tells of business waiting to be sold

●

Sales Opportunities in Utility Program Explained

TYPICAL of the manner in which the company's commercial program was interpreted to groups in the industry in terms of opportunities for more business were two meetings held by the San Francisco Division, Pacific Gas and Electric Co. The first was a meeting with the dealers of the city; the second with the contractors, wholesalers and manufacturers' representatives.

Most important feature in these meetings was the summary of business opportunities for contractors, dealers and the trade as discovered by accurate surveys conducted during the past year by company representatives. Frank Talcott, division sales manager, presided at both meetings and opened the discussion by pointing out the sales advantages opened up by the new lower rates the company has just announced. The savings from these rates, he pointed out, if utilized in improving electrical facilities, would practically pay for the new installation within a period of a year or more. R. E. Stevens explained the specific sales opportunities in the sale of appliances and of equipment as discovered in a store-to-store, house-to-

house survey of the entire division.

Similar meetings with the trade were held in each of the divisions where likewise the results of surveys demonstrated the market possibilities for increased business if the industry takes advantage of the new low rates and the present trends.

New L. A. Code Opens Business Opportunities

Embodying some new circuiting ideas, and demand factor for heating, air conditioning and cooking devices which will permit the use of smaller conductors, switches, etc., and the modification of unreasonably severe requirements in residential occupancies not under the authority of State Safety Orders, the new draft of the Los Angeles Electrical Wiring Code prepared by an industry Central Planning and Coordinating Committee has been submitted to the city's Board of Building and Safety Commissioners. The advent of Boulder Dam power brought into focus the necessity of clearing up ambiguities resulting from a long history of ordinance writing and revisions.

The previous code became effective in 1934 after 2 years of preparation. Prior to that time an ordinance prepared in 1917, but very general in nature, had been burdened with numerous supplementary rules and interpretations. The last writing of the code proved to be even more confusing, although written with the intention of being fairly legal. In fact, its very legality was its worst feature, since repetition and lengthy sentences made it difficult for wireman and contractor as well as inspector to understand.

One of the first tasks undertaken by the Electrical Development League of Southern California was the appointment of an industry planning and coordinating committee. A sub-committee of that group consisting of J. W. Rose, electrical engineer, Department of Water and Power; L. H. Ellett, master electrician; and Arthur Kempston, sales engineer, National Electrical Products Corp., was to prepare a new draft of the ordinance acceptable to all branches of the industry. Long active in inspection affairs and a student of codes, Mr. Rose represented the public utilities' interests. A competent electrical contractor, supervisor and wireman, Mr. Ellett represented the viewpoints and interests of electrical contractors and workers. Arthur Kempston, formerly chief of the Electrical Department, city of San Francisco, and now sales engineer for a manufacturer, represented manufacturers' and wholesalers' viewpoints with a sympathetic understanding of the inspection viewpoint.

One of the main purposes of the revision was to coordinate the Los Angeles Electrical Code with the State Safety Orders so as to make it conform wherever possible and make unnecessary the confusion as to installation practice on industrial jobs. The committee was also instructed to maintain all standards of electrical work and wiring which had become established in Los Angeles. During the drafting of the ordinance, a copy was submitted to Ben Woodward, general counsel, Southern California Edison Co., for a check as to language, legality, etc. Frank H. Short, electrical engineer, State Industrial Accident Commission, also gave much time and friendly cooperation to the coordination of the ordinance with State Safety Orders. When the rough draft had been completed, R. H. Manahan, chief of Electrical Division of the Building and Safety Commission, also assisted. Practically every group in the industry has been consulted by the committee as to conditions and requirements relating to their particular kind of electrical work so as to coordinate the ideas of all groups into a satisfactory whole.

Final meeting before the Building and Safety Commission indicated unanimity of industry support and the ordinance is scheduled for early adoption.

Date Set for Joint Inspector Convention

The week of Aug. 23, 1937, has been set as the date for the joint convention of the Western, the Northwestern and the Southwestern Sections of the International Assn. of Electrical Inspectors in Salt Lake City, Utah. Members have been urged to plan to make the occasion both a vacation and the annual convention of the association.

In making this announcement, Harry V. Dobson, city electrical inspector, Santa Barbara, president of the Southwestern Section, and Harold L. Gerber, secretary-treasurer, urged members of the various articles committees for revision of the National Electrical Code to make an early study of their articles and to place suggestions of changes in the hands of the clearing house committee not later than June 30, 1937, in order that they may be reviewed and arranged prior to the convention. Very little time on the program will be given to discussion of these proposed changes and therefore all of this work will have to be done prior to the convention meeting. Ben C. Hill, chief inspector, Oakland, has again been named chairman of the clearing house committee. A full list of committee appointments has been sent to all members of the sections.

Agenda for Contractors' Meeting Announced by Boyd

NEED for some uniformity in labor rates and charges, in view of rising costs, reports of pending legislative changes affecting contractors, and vital discussions of future policy relative to the National Electrical Contractors Assn., provide a program for the meeting of the Northern California Electrical Contractors Assn. at Hotel Californian, Fresno, April 10, which will merit a representative attendance from all parts of northern California, according to Frank Boyd, president. Mr. Boyd has announced the full program for Saturday, April 10, beginning at 9 a.m.

After opening remarks and committee reports Roy Butcher, chairman of the State Contractors' License Board, will report on pending amendments to the Contractors' License Law. Dan Bronson will then give a report on the Federal Trade Commission's findings and its "cease and desist order" in the matter of the National Electrical Manufacturers Assn. and the wire and cable manufacturers. An analysis of corporation versus partnership as a method of doing business under the new tax situation will also be discussed. Frank Sievers and Louis Douat will lead a discussion on the needed increases in labor rates and charges.

The afternoon session will begin with an executive committee report regarding relations with the national association, to be followed by an address given by Earl Peak, president of the N.E.C.A., who is making a special trip to the West to attend this quarterly meeting. Discussion regarding revision of the constitution and bylaws of the northern California association will then follow and the meeting will finish with a report from A. L. Stone, national executive committeeman and president of the Los Angeles Electrical Contractors Assn., on the plans for the national convention in Los Angeles next October.

An executive committee meeting on Friday evening, April 9, will precede the Saturday quarterly meeting of the membership.

Fresno Contractors Assn., of which Ted Curry is president, is making plans for the entertainment of the convention visitors in the usual Fresno style of hospitality.

Electra's Husband

A Wide Open Forum

"ELECTRA, what impression did you get from Grand Coulee and Bonneville now that you've seen them both?" I asked after a recent visit to the latter.

"Oh," she replied, "of course, the country was marvelous, and then there is the thought of how tiny man can take those tremendous machines and make such changes in God's landscape and all that. But my real impression?" she mused, "Well—it is one of confusion. Where is all the money coming from, can it be paid back, how are *we* going to benefit, and so on."

"I'm glad you're at last thinking in terms of economics at least part of the time," I answered, "and you are not the first person in the Northwest whose imagination has been captured by the magnitude of those projects only to be thrown into confusion when the mind is turned to the economic questions they raise. I think you would be even more confused if you had attended the Commonwealth Conference in Eugene, Ore., with me the other day, and heard the various opinions expressed by individuals and organizations as to what the government should do with the power from Bonneville."

"What was that like?" asked Electra.

"Well, at times it was like a hearing where experts or representatives of interested organizations presented reports of fact and argument. At times it was like a legislative session where the speakers used the subject, "What to Do with Bonneville Power," as the vehicle for a tirade against private companies. And, at times, it was like a cat and dog fight, with the opponents cracking back and forth at each other without asking a 'by-your-leave' from the chair. But by and large it was all right. It let a lot of people unburden themselves in a more or less public forum.

"They were all there: Army Engineers, professors, Oregon State Planning Board, Pacific Northwest Regional Planning Commission, chambers of commerce, the Grange, state legislators, the utilities, labor—that is, they were all there except John Public, as such. He, unorganized as usual, was relying for representation on organized minorities.

"There was a direct representative and spokesman for Mr. Ickes' Power Committee. This was a personable young man, named Edward H. Foley, Jr., who is general counsel for the P.W.A., and he was as non-committal as the local folk would let him be, and I will say they were pretty easy on him. A buzz of expectancy greeted him when he rose to discuss the national power policy. We hoped we might learn something; but we were doomed to disappointment. The government wanted to dispose of its surplus electricity to the greatest number of people at the lowest possible rate and favored the T.V.A. method of doing it, said Mr. Foley, carefully reading his carefully written speech. He did introduce an idea new to most of us, and this by inference, that Herbert Hoover started all this dam trouble at Boulder. Later he was frank enough to admit that both Grand Coulee and Bonneville were started as counter attacks on the depression, and then he recited the legal fiction that Bonneville was primarily for navigation, and Grand Coulee for irrigation.

"His other speech on the proposed legislation for Bonneville was prepared with equal care and likewise was read word for word.

"At the end of his speech he made a quite definite recommendation, carefully camouflaged in the gentle language of suggestion, that the state get busy and pass laws legalizing the issuance of revenue bonds, and further revise its enabling provisions to permit the prompt formation of the utility districts or other public corporations to buy Bonneville power so as to keep the whole works in the hands of public agencies.

"There was much said of the 'postage stamp' rate."

"What in the world does that mean?" asked Electra.

"Well," I said, trying not to hesitate, "the wisecracker who so glibly coined the phrase had in mind the first class postage rate, or in other words, uniform rates throughout the whole transmission area with all users, regardless of location, bearing an equal share of the entire transmission costs. The Grange wants this but communities close to the dam want a zone rate that will give them the benefit of little or no transmission cost, and chambers of commerce and the more practical of the 'Planners' want at least one zone close to the plant in which a switchboard rate without any transmission cost will apply, in the hope of attracting the type of industry needing large blocks of low-cost power.

"Most unique proposal* came from a college professor who advocated a federally-owned grid transmission system to blanket the transmission areas of Bonneville and Grand Coulee. Into this system on the one hand would be poured power from both government and private plants under definite contract, and out of this system on the other hand, would flow the load requirements of each distribution area, with the distribution being handled by municipals and other public corporations, or private power distribution companies. He claimed this would be the most painless way possible of putting the private companies out of business, since in the process of developing the 'six and eight-lane highway' transmission grid, it would probably prove feasible and economical to take over at a good price the present 'two-lane highway' transmission lines privately owned. This would break the back of the present monopoly of the private companies, he contended, leaving them in the generating business under fixed contract on one side of the federal grid, and in the distribution business on the other side, provided, of course, municipalities chose not to buy out existing distribution systems by the same due process of law which he advocated for the purchase of the transmission lines."

"Well, this may be very, very interesting," said Electra, "but it certainly doesn't do anything about my confusion. And by the way," she added menacingly, "I have one terrifically practical question."

"Yes?" I ventured.

"You know those new shoes I bought to replace the ones I ruined walking in the mud at Bonneville? Well, just put them into your expense account and pay out now. That's undoubtedly the collector who's ringing the doorbell."

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* Bulletin No. 90, Engineering Experiment Station, University of Washington, Seattle, Wash.

Cooperation on Parade

OUTSTANDING ACTIVITIES OF THE RECENT PAST AND FUTURE WHICH CONSTITUTE A SUMMARY OF COOPERATIVE MERCHANDISING IN THE WEST

"Going Places" Dramatized in B. C. Electric Show

From the time James Lightbody, publicity manager, stepped out from between the pages of a giant 6x4-ft. book, entitled "Anthony Advertising," until W. C. Mainwaring, general sales manager, wound up the meeting with a rousing message of encouragement, 300 members of the sales department and officials of the B. C. Electric Railway Co., Ltd. sat spellbound as the sales plan for 1937 was dramatized following an enthusiastic dinner at the Georgia Hotel in Vancouver.

The dinner was given by the company in the form of a compliment to the newly-created General Sales Department. Acting as hosts were officials of the company headed by W. G. Murrin, president, and E. H. Adams, vice-president and comptroller. To demonstrate and sell the 1937 sales plan to every member of the interlocking departments, department heads hit on a novel idea.

Slogan of the company's sales department, "We're Going Places in 1973", was reproduced above the stage in illuminated lettering, while on the stage itself was a traffic signal, complete with flashing red and green lights, bell and traffic cop.

Each selling division presented its story in dramatic, semi-humorous vein. As the characters appeared on the stage the traffic cop flashed the light to "STOP" and blew his whistle. The intruder then presented his program for the year, loud speakers carrying it to the audience. His finishing lines would contain the budget set for his department and the query, "Will this program get me into the big 1937 sales plan?" An applause vote by the audience (creating all the elements of a popularity contest) would cause the traffic light to ring and flash green, and the department head would be on his way to join the plan. As each department was admitted, its 1937 budget was rung up on a huge cash register.

Advertising was dramatized by turning the pages of a giant book, each page representing a section of the advertising program such as "newspapers", billboards", "radio" and so on.

The dealer relations department used the ever-popular theme of 'boy meets girl', the very attractive young lady being the dealer while the gallant young man represented the department.

"There's Gold in them thar Quotas" as shown in the B. C. Electric's "Go—Not Stop" sales performance

Quintuplets made a hilarious plot for the lighting department, the arrival of each signifying the need for greater revenue from the five lighting fields. Merchandising's major appliances were represented by ferocious acts from an animal circus, ranges, water heaters, refrigerators, being behind the bars of cages and identified by appropriate names which were suavely explained by the trainer who paced in front.

Script for the entire production was written by Jack Priestman of the light and power department, and the role of traffic officer was played by Dick Longmuir of the merchandise stores.

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Society Launches First Refrigerator Campaign

FIRST electrical promotion event of the year in northern California under auspices of the Electric Appliance Society begins in April with electric refrigerators. The program is to run from April 5 to May 1, inclusive, under a campaign slogan of "It Pays for Itself—Then Pays You, the Thrifty New Electric Refrigerator." The Society program promises to have even more sales punch than in previous campaigns.

Backing the dealer campaign will be advertising in more than 250 newspapers in northern California, four ads in each, stickers on half a million electric bills, hostess programs in P. G. and E. offices, cooperative displays by the dealers in these same offices, radio spot announcements and four of the P. G. and E. "California Tales" radio programs, besides free display cards to dealers, publicity and free mat service to newspapers and dealers and a contest for dealers' ad writers and display men. There will also be a public essay contest in *P. G. and E. Progress*. Special editions are planned in several newspapers in which Society ads will be supplemented by dealer advertising.

Previous campaigns by the Society have proved so stimulating to public acceptance of electric refrigerators that the industry is looking forward to record-breaking results. Active participation by dealers, wholesalers, distributors and the utility has been pledged for this first drive of the new year.

●

Range Accessory Is Effective Offer

Unique follow-up of electric range users for the sale of electric heat was made by Pacific Gas & Electric Co. Each user was sent a folder offering a 3-kw. Wesix automatic electric heater for connection to the range at $29.95, on terms of $3 a month. Use of an electric heater obviates the necessity for a heater using other fuel, which might be used to cook upon rather than the electric range.

According to Wesley Hicks, the idea was used successfully several years ago but is good again because of the returning interest in electric heat.

Since the heater is 230 volts, 3,000 watts, a special outlet is necessary. For this, a standard porcelain 30-amp. outlet is connected on the back of the range, with a 30-amp fuse to meet Underwriters' requirements. The outlet does not damage porcelain on the range and is convenient for the heater.

●

ANNE GLOTZBACH, who will be remembered as the winner of an essay contest on the benefits of electric cooking, was the first prize winner in the Edison Electric Institute contest for an essay on "Taxation and How It Affects Me." Miss Glotzbach is an active Southern California Edison Co. Women's Committee member in Santa Ana. Josephine Hodson, also of Santa Ana, won the third prize in the same contest.

Mary Elizabeth Meis and Mildred Kier, who conducted the demonstration of "different" dishes possible with table appliances

San Diego Stages "Coming Out Party for Table Appliances"

By J. CLARK CHAMBERLAIN
Manager, Bureau of Radio and Electric Appliances, San Diego

TABLE appliance promotions are quite common, yet San Diego has blazed a trail in staging the first non-commercial, cooperative undertaking of its kind in its first "Coming Out Party for Table Appliances," held in Balboa Park, March 9, 10 and 11.

Under the sponsorship of the Bureau of Radio and Electrical Appliances, this program was originated to do three things: (1) Demonstrate the many delightful and uncommon uses the ordinary table appliance may have: (2) Create interest in all types of table appliances by showing everything available in all lines. (3) Bring back into active use appliances which were not being used because of lack of appreciation or understanding.

The program was set up as follows: The American Legion Auditorium in Balboa Park was secured because of its large seating capacity, appropriate stage setting, and generous product display space. Each distributor's representative was given space in the back of the auditorium for a display of table appliances. On the stage appeared Elizabeth Mies (a home service representative who had been borrowed from the San Diego Consolidated Gas & Electric Co.) breakfast, luncheon and dinner routines were put on, varied each day and designed to bring into play every type of table appliance.

Each mixer, waffle iron, grill, coffee maker, roaster, etc., represented was given its "break" at some time during the three-day program, but at no time was any product named or any company mentioned. In all cases of the breakfast, luncheon and dinner menus, unusual uses of table appliances featured the recipes selected. For example, omelets, spiced waffle cakes, etc., were made instead of the conventional waffles. Casseroles were used for breakfast foods. Cocoa, mocha coffee, soups, etc., were featured in coffee makers, and roasters were used for many delightful purposes. More than sixty different appliances were brought into play during the demonstrations.

The "Coming Out Party" for table appliances was not advertised as a cooking school. It was generously publicized in all mediums as an opportunity for appliance users to learn how to get more out of the appliances now owned. The sales appeal was entirely eliminated, and in its place was substituted the opportunity to visit the manufacturers or distributors exhibits and there see various appliances demonstrated. In fact, no sales were permitted.

Doors were opened at 12 noon, and for two hours, open house was held by the participating exhibitors. Those who had questions to ask about some particular appliance they owned were able to satisfy themselves by talking with the demonstrator or representative in the exhibit of that make. This opportunity proved exceptionally well worth while, and definitely proved that many people buy or are given appliances and then seldom use them because of a lack of understanding.

The stage presentation opened at 2:00 p.m., and in a most entertaining fashion Miss Mies went through her daily routines, with the audience following her through the use of previously printed daily programs. At 4:00 p.m. the stage presentation closed with a door prize drawing (which, however, had not been advertised in any way). Then followed another "open house" reception by the exhibitors, which usually lasted until nearly 5:00 p.m.

In the three-day program, a total attendance of 2,200 (several hundred of whom were men) was registered. Interest on the part of attenders was exceptional, and proved conclusively the fact that few appliance users begin to get the most out of the things they already have. As one might expect, a heavy interest in the purchase of all types of table appliances was noted. As no sales were permitted, distributors referred prospective purchasers to their dealers.

The general cost of putting on the "Coming Out Party" was undertaken by the Bureau of Radio and Electrical Appliances. Individual distributors supplied the table appliances used by Miss Mies on the stage and during the necessary "rehearsals", and as a part of their cooperation, undertook to get their dealers tied in to the program with appropriate window displays. All dealers in the county displayed attractive window cards in color (a reproduction of one of our advertisements) and generally cooperated in stressing table appliances during this promotional period.

There is no way of checking the results of this undertaking just at this time, but all who participated feel the experiment was eminently successful, and certainly is worthy of inclusion in our future annual promotions.

●

COAST COUNTIES GAS & ELECTRIC CO. this year again offered its consumers a "dividend" in the form of free electricity for all use above the previous month's bill. This offer was made from Jan. 26 to Feb. 26. Last year a certificate, good for a month's bill in electrical merchandise, proved a sensational feature. However, this year the free electricity offer was made and dealers throughout the company's territory tied-in with cooperative advertising. They were able to offer one month's use of the appliance on this basis without any cost.

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A HOME PLANNING DEPARTMENT, cooperating with architects and contractors, has been established by Central Arizona Light & Power Co. Advertising this service, the company advises home-builders to consult local architects and thus save home builders money by avoiding faulty design. The department assists in the planning of kitchens, home lighting, heating and cooling. Contractors tying-in with this activity are finding it a source of business.

Utah Power Stages Sales Convention of its Own

Gathering in Salt Lake City for the first general sales conference of its kind ever held by the Utah Power & Light Co., residential, commercial and industrial sales people spent six full days discussing problems in commercial sales.

The conference idea originated with progressive Sales Manager W. A. Huckins who, in starting to carry out a million dollar sales program saw a need for inspiration. Members of Western Colorado Power Co., Bountiful Light & Power Co., dealers, wholesalers and manufacturers were invited to participate in the program with Utah Power sales people from nine districts.

In order to reach a 1937 goal of $1,012,000, E. A. R., the company plans to sell an average of 100 major appliances per day.

Residential, commercial and industrial departments were allotted two days each for discussion. Over 100 speakers contributed to the variety and scope of the conference. Talks and papers were both technical and informative, covered market analysis, fundamentals of selling, customer relations, products, personnel and organization. The unsold, or low-use customer proved an important factor, as did dealer relations.

"Today we stress the use of electricity rather than the sale of it," said G. M. Gadsby, president of Utah Power, at the opening session. "If customers now owning idle appliances would make use of them, our objective of 1,000 kw.-hr. per customer in 1937 would be achieved."

The two opening days were devoted to residential problems. Outside dealers and educators were invited to provide wider opinion:

Selling ranges and refrigerators was treated by B. F. Rowley and his Hotpoint organization; what a modern kitchen means, Mrs. Rose Widtsoe, dean of home economics, University of Utah; planning a modern kitchen, Mrs. Effie S. Barrows, extension economist, Utah State Agriculture College; equipment for a modern kitchen, Mrs. Irene Barlow, home economist, Brigham Young University; how to sell farm service, R. E. Gale, commercial manager, Idaho Power.

Demonstrations, film presentations, appliance exhibits added to the fast moving program.

Each program change brought additional delegates from remote sections of the territory. Some traveled 1,000 miles over roads made almost impassable by deep snow.

The second two days were given to commercial phases of the 1937 sales program. A highlight of the commercial section was a talk by Don. P. Lloyd, secretary-manager of the Utah Retail Grocers group, who pointed out the growing need of cooperation between allied organizations.

G. L. Ellerbeck, newly appointed superintendent of the utility's industrial section, deviated from previous discussion methods by specifically pointing to jobs that needed power and lighting service. Some fifty sales people discussed the problem of supplying power to industry; i. e., coal and metal mines, smelting, irrigation pumping; milling and numerous smaller industries.

"We must be ever mindful," said Mr. Ellerbeck, "that the success of our industrial sales program is directly dependent upon the financial success of the industrial operators who buy our service, and we must make our service a profitable investment."

The conference was pronounced successful in every respect. Its stimulating and informative nature bid well to make it an annual event.

●

RESTAURANTS in southern California are afforded the opportunity of seeing the newest electrical equipment through the medium of a streamlined exhibit trailer, put in service by Southern California Edison Co.'s new business department. A warming table which permits different dishes to be held at different temperatures simultaneously attracts unusual interest. Complete restaurant equipment is carried.

Alameda Offers Trial of Electric Heating Equipment

A RANGE a day was sold on the lines of the Alameda city system during 1936, according to figures just published in *"The Electric Flash,"* consumer publication of that city. From Jan. 1 to Dec. 31, 1936, 344 electric ranges were added. Water heaters also increased, with 75 added during the period. The total of connected ranges in Alameda is 1,081, or an average of more than one to every ten homes in the city. Ten per cent of the ranges were sold by dealers, the remainder by the Bureau, although the Bureau provides wiring for dealers at no cost.

At the same time a rate reduction to domestic and commercial establishments was likewise announced. The new rates are similar to the P. G. and E. rates, beginning with a service charge of 40 cents, the first 35 kw.-hr. at 3.6 cents, the next 165 at 2.2 and all in excess at 1.2 except where a range or electric heat is connected, in which case the last block is 1 cent.

To stimulate electric heating a new free service has been inaugurated by the Bureau of Electricity. A survey of homes to determine exactly what electric heaters are necessary and what the cost should be, together with graphic demonstrations of essential features of electric heating right in the home by means of portable apparatus is effective in developing new customers. The portable equipment is allowed to remain in the home for several days, during which time recording instruments show the periods the heaters are on and off and the amount of current used. With this type of demonstration and the use of charts a rather accurate estimate of the cost of heating a home for the entire year can be presented to the consumer.

A kitchen clinic is being planned as a spring range promotion, according to Henry A. Lewicki, in charge of sales for the Bureau.

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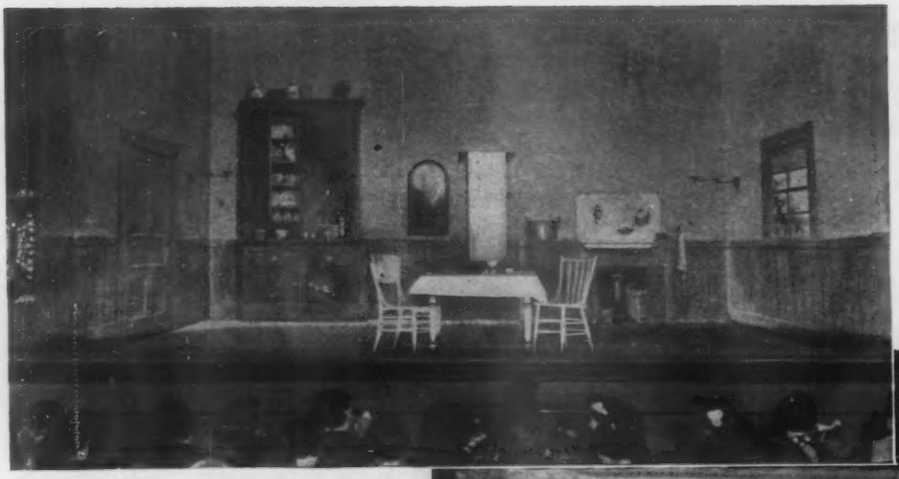
POCATELLO division of the Idaho Power Co. inaugurated a new auditorium and model all-electric kitchen recently. Cooking schools and lighting demonstrations will be available. It will also be open to civic and church organizations for public meetings. Three advantages of the all-electric kitchen are demonstrated to customers: first, the utilitarian aspect — kitchen jobs are done quickly and easily, conserving the homemaker's time; second, the contribution to better family health from a cleaner, more sanitary and more wholesome kitchen, and third, the aesthetic value, that of pride in and enjoyment of, the beauty and cheerfulness.



Stage Sets Contrast Old and New Kitchens

An innovation in cooking school presentation are these stage sets. The old-fashioned kitchen above serves to emphasize the beauty and convenience of the all-electric kitchen shown in the second scene below. The sets are portable. The contrast has appeal that neither scene would have alone

These dramatizations were employed at a series of ten electrical home management schools conducted throughout the winter in southern California. Daily newspapers, dealers, the Southern California Edison Co. and the Mogenson Co., newspaper representatives, co-operated in sponsoring the meetings

"Ready Kilowatt" Adopted By Many Western Utilities

FOLLOWING Horace Greeley's advice to young men, "Ready Kilowatt" has come west. Not only has he come west but he has been adopted by a large number, in fact the majority of the utilities in the Far Western states, as a new ambassador of goodwill to the public, better sales for the industry and more human understanding within the various departments and branches of the industry. Ashton B. Collins, of Birmingham, Ala., father and copyrighter of Ready Kilowatt, made his first tour of the western territory and received almost unanimous adoption of his symbol.

The following companies have adopted Ready Kilowatt as a new symbol for the interpretation of their sales and public relations messages to the public: Southern Colorado Power Co., Utah Power & Light Co., Western Colorado Power Co., Idaho Power Co., Washington Water Power Co., Puget Sound Power & Light Co., Portland General Electric Co., California Oregon Power Co., Mountain States Power Co., Yamhill Electric Co., Molalla Electric Co., San Diego Consolidated Gas and Electric Company, and several others are seriously considering its adoption.

The little cartoon character depicting electric service is amazingly flexible and adaptable to various tasks and responsibilities. Those utilities which have used it extensively in the east have found that it is a humanizing medium both within the organization and outside of it. It is designed to do for the electrical industry what such symbols as the Victor dog, the Fisher body coach, the Old Dutch Cleanser woman in the sunbonnet, and the Smith Brothers with their whiskers have done for other products. It removes the emphasis from the corporation and places it on the product itself, electric service. It also enables the utility to be more human in its advertising by letting the little character speak for it rather than the more formal company business name.

Ashton Collins, its originator, was formerly commercial manager of the Alabama Power Co. and later with the Edison Electric Institute. He has copyrighted the symbol and furnishes with it an exchange of ideas as to its use which seems to be developing so rapidly that such a service in itself is proving of great value to the users.

●

HOME WORKSHOPS are on the increase. More and more attention is being given to stimulating this type of electric utilization. Northwestern Electric Co. staged a display for the Portland Home Workshop Club in its windows recently which attracted crowds during an entire week. Actual wood work was carried on in the windows and interested groups gathered to watch the making of homecraft articles. Resulting sales in such equipment have been better.

Old Lamp Trade-in Cleans Out Stocks

Result getting, clever wind-up to the I.E.S. lamp selling season was provided in the Washington Water Power Co.'s territory both by dealers and the company in a sensational 20-per-cent-off offer made on the purchase of new I.E.S. better sight table or floor lamps with the trade-in of any standard floor or bridge lamp, no matter what its age or condition.

The campaign was carried to the public through large advertisements and direct mail sponsored by the power company. Dealers tied-in. Result was a final clean-up at the season's close. Purpose was to clear stocks of excess carry-over, permit the presentation of new models this fall.

●

NORTHWESTERN ELECTRIC CO. has offered dealers an unusual service in the mailing of sales literature. In a recent issue of *Northwestern Dealer News*, dealers were offered the opportunity to deliver their advertising material to the company, which in turn would circularize all Northwestern customers free of charge.

●

ACOUSTICS in the movie, radio and building fields have become important enough to require definite terminology to eliminate confusion. The American Standards Assn. is compiling a standard acoustical terminology.

Hotpoint Swings Into the Full Kitchen Line

A COMPLETE line of refrigerators, ranges, washing machines, ironers, dishwashers, water heaters bearing the famous Hotpoint name, and separately distributed from their blood-brothers, the General Electric line, were initially announced to the trade late in January and early in February. The distributor in each case determined just what procedure he would use to bring the dealers to the new line, for in many cases the new distributorships had to start from scratch, with no dealers on the books. Press agented beforehand by big advertisements in the trade press, by direct mail and personal contact with the trade, the industry was anxious to see the new line when it swung into the market.

Electric Kitchen Appliance Co., of San Francisco, a brand new distributor created just to handle the Hotpoint line in northern California, staged its showing coincidentally with the spring market week of the Western Furniture Exchange, taking a suite of rooms at Hotel Whitcomb in which to stage its display. Separate rooms were devoted to refrigerators, ranges and water heaters, washers and ironers, to the electric dishwasher, and to advertising and promotion material. Dealers were taken through the preview in small groups, explained the line in person. Clyde Allen, district Hotpoint manager, supervised the introduction of the new line.

Similar technique was employed by the other Hotpoint distributors: General Electric Supply Corp., in Los Angeles, Long Beach, San Diego, Fresno, Phoenix and El Paso; Graybar Electric Co. in Salt Lake City, Spokane, Portland; and Stubbs Electric Co. in Portland.

The new refrigerator features the vacuum sealed "thriftmaster" unit, and speed freezer. The range features a new combination broiler pan and griddle. Hotpoint's washer employs what it calls a "thriftivator" as its washing gyrator. And its dishwasher (all these products were described in the New Products section of last issue) employs a side door opening unit which can be built into existing sinks or made a part of a new unit kitchen.

●

Fairbanks-Morse Covers Entire West With Meetings

TYPICAL of its program this year of holding dealer meetings in all parts of the West was the Fairbanks-Morse regional meeting in Spokane in mid-February. The Electric Age Co., its distributors in the Inland Empire territory, were the hosts to some 150 dealers and salesmen to hear the story of the Fairbanks-Morse "conserva-dor" models and sales program for 1937. Although introduced into the territory for the first time this year, after the meeting 83 dealers were signed up. Besides the refrigerators, electric washers and ironers were also displayed and sold.

●

Grunow Products Shown by Connelly Co. in Northwest

F. B. CONNELLY CO., of Seattle, Portland, and Spokane, conducted the spring showings of the new Grunow refrigerators along with several other of their lines during the early part of February. First came a special meeting of wholesale salesmen and branch managers, in Portland, Jan. 24, to formulate plans and prepare the way for the dealer meetings. Kenneth A. Connelly, vice president, directed this meeting and pointed to the volume potentialities of appliance business in both 1936 and 1937. He told of the big advertising program and the lower prices announced for the Grunow line this year, with definite appeal to be made to the mass market.

Walter McCurdy, general sales manager and Mr. Connelly had just returned from the factory. W. E. Darden, western district manager of the General Household Utilities Co., manufacturers of Grunow, likewise attended the meetings.

A series of dealer meetings in Washington, northern Idaho and Montana followed, since the Connelly Co. has just had 15 counties in Montana added to its Spokane district, already handling the greater part of Montana, northern Idaho, Washington and eastern Oregon. Personnel at the Spokane branch has likewise been increased, according to C. A. Tubbs, Spokane manager.

Grunow showings, according to W. E. Darden, have now been held in all parts of the West.

●

A PREFABRICATED HOUSE, completely electrified, recently attracted widespread attention at Colorado Springs, Colo. Designed and fabricated by General Houses, Inc., Chicago, the house carries all structural loads on steel, is finished outside with asbestos cement, inside with painted plywood, bears FHA approval for insured mortgage purposes, and is priced on a par with well-constructed frame houses. The equipment, which is General Electric, and was furnished by Majestic Electric Co., includes air conditioning, automatic furnace, washer, ironer, refrigerator, range, dishwasher, radio, Better Sight lamps, clocks, toaster, mixer and several other smaller appliances.

Garden Lighting Benefits From Christmas Campaign

GARDEN lighting has definitely been helped by the Christmas lighting drive among the 27,000 Denver homes and yards which participated in the Christmas lighting contest of last December. The Rocky Mountain Electrical Assn. found last year that Christmas lighting promoted yard and garden lighting and that yard and garden lighting likewise increased Christmas lighting, largely due to the fact that many people made permanent installations of equipment, readily permitting easy summer or winter outdoor connections. Electrical contractors received numerous substantial jobs, installing underground facilities and outdoor outlets on the home or garage.

Various interests are expected to join the association in promoting illumination of gardens, shrubs and foliage this year. Dealers in lawn umbrellas, tables and other outdoor living room fixtures will participate. It has been found that yard lighting stimulates purchase of new furnishings, for electric illumination shows up worn out or defective furnishings more than does daylight.

A series of prize contests will stimulate interest in garden lighting and Denver parks will this year light up areas of gardens and foliage. One flower garden covering an area of more than a block square, the most spectacular planting in the Rocky Mountain region, will be illuminated. The electrical industry is planning to participate on a widespread scale.

●

ONE OF MCCALL'S Magazine "Homes of the Month" is to be built in Portland by Allison H. Dean at 1815 Southwest Spring St., Portland Heights. The McCall's Home of the Month is designed as a livable six-room house which can be built at moderate cost. It is engineered and designed for air conditioning. Another interesting feature of the March issue was a suggested three-year plan for furnishing a living room. The first year, it was stressed, should be devoted to providing good sitting and good lighting, adding comfort and accessories the second and third years.

●

CAR RADIOS—When the united industry in Idaho produced evidence that 15,000 Idaho cars are equipped with radios, involving equipment amounting to $700,000 and that the proposed bill to prohibit use of radios in autos on Idaho highways would not only be unconstitutional and unenforceable, but absurd, the bill which was placed before the Idaho Legislature was defeated.

Wiring Booklet Issued By Bureau for Public

"The Key to Electrical Convenience in Your Home" is an excellent new publication of the Pacific Coast Electrical Bureau for distribution by the industry to the public. It gives in concise form facts which the public should know about wiring, tells why the city has inspection of wiring, advises provisions for the future growth of usage of electricity in the home, tells of the Red Seal standards and ends with a list of reminders as to the safe use of electricity.

Included as a loose leaf insert in the book is what is called "the Add-an-Appliance Plan." It consists of a chart listing all of the various appliances which can be used in the home and having columns for checking whether the recipient has, wants next, wants eventually, and eventually acquires the appliance and for listing the cost. By filling in the cost column the owner has a perpetual inventory of the value of his appliances.

●

BELIEVING IN TAKING ITS OWN MEDICINE, the S & M Lamp Co. recently reconstructed and redecorated its offices at 36th Place and Broadway, Los Angeles, Calif. Jim Shirreffs, president, ordered installation of 29 of the company's flush ceiling fixtures with 200-watt lamps. Mounted in a 9-ft. ceiling, foot-candle intensities are obtained as follows: four fixtures in the executive office, 10x11 ft., producing 30 foot-candles; stenographic room, 27x16 ft., twelve fixtures producing 30 foot-candles; sales office, four fixtures, office 11x15 ft., 25 foot-candles; engineering and advertising office, 11x15 ft., six units, 42 foot-candles. Three additional floodlights with clear lenses produce an indirect lighting of 80 foot-candles on the drafting board. In the switchboard hall, 11x8 ft., three fixtures are installed producing 30 foot-candle intensity. All readings were taken at night. Color decorations include light green walls, cream-colored ceilings and dark green floors. All windows are shaded and the light controlled with Venetian blinds.

●

SPECULATOR demonstration of old versus new was conducted in the home makers' forum at Ebell Auditorium, Oakland, by Martha Lee, director of the Oakland *Tribune* home economic service and Mrs. Alice Bradshaw, demonstrator for Mixmaster. A timing contest in cake making, one with old-fashioned implements, the other with the mixing machine, was conducted. Time included that for washing utensils. The electrical way proved to be a big time saver.

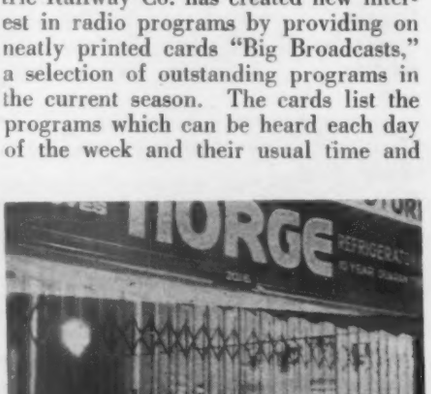
ACTION by the Federal Trade Commission to stop a Chicago firm from advertising and selling so-called air purifying devices as air conditioning calls attention to the Commission's ruling that appliances which do not fully meet the definition of air conditioning may not be advertised as such. The National Better Business Bureau likewise requests all interested parties to eliminate the term air conditioning or air conditioner from descriptions of such articles as fans, humidifiers, odor absorbers, underwear, hats and so on. The Air Conditioning Manufacturers Assn, is likewise making a strong effort to agree upon a program to eliminate competitive arguments and false claims. Approach of the air conditioning season makes these developments important.

●

"GOOD RADIO RECEPTION" is the title of a booklet prepared by the joint coordination committee on radio reception of the Edison Electric Institute, National Electrical Manufacturers Assn. and Radio Manufacturers Assn. Designed as a consumer booklet, it tells how to get good reception by proper antenna installation and proper adjustment of set. Simple analysis of causes for poor reception and interference is included. It will prove an effective hand-out piece for radio and electrical shows, display rooms, radio dealers, etc.

●

FINDING THAT RADIO LISTENING had been dropping off, chiefly because of waning interest in radio itself and because of ignorance of featured programs which might be enjoyed, the B. C. Electric Railway Co. has created new interest in radio programs by providing on neatly printed cards "Big Broadcasts," a selection of outstanding programs in the current season. The cards list the programs which can be heard each day of the week and their usual time and station. Free home tube testing is offered as a solution to any problem resulting from imperfect reception. The company maintains "tube doctors" who make free home tests of radio tubes.



It's the climate, no doubt, but Downtown Appliance Store in Fresno has adopted the open-faced market idea for its appliance store. It is easy for passerby just to walk right in

●

A HANDBOOK OF ELECTRIC COOKERY, published by the National Kitchen Modernizing Bureau, entitled "Meals Go Modern—Electrically," is now offered to the trade as a consumer booklet to be used in stimulating the sale of electric ranges and electric kitchens. The book is written by a well known food economist with the cooperation of the home making staffs of the leading women's magazines. It offers ideas and suggestions on how hours spent in the kitchen may be reduced to provide the housewife with opportunity for doing other things about the home. Thus the booklet is more than a recipe book, although it does contain instructions for using electric ranges and a number of good recipes. Copies are available from the National Kitchen Modernizing Bureau, 420 Lexington Ave., New York.

●

A KITCHEN PARTY for the wives of employees of the Idaho Power Co. was held recently in the new all-electric kitchen of the Payette office, beginning a series of such parties to be held there for women of the community. The idea was to familiarize the wives of employees with new methods in electric cookery and kitchen planning. Surface cooking, oven baking, roaster dinners, thrift cooker use, and advantages of an electrical mixer were among the things demonstrated by Miss Lois Bailey, home economist, and Miss Delphine Stewart, of the home service department.

●

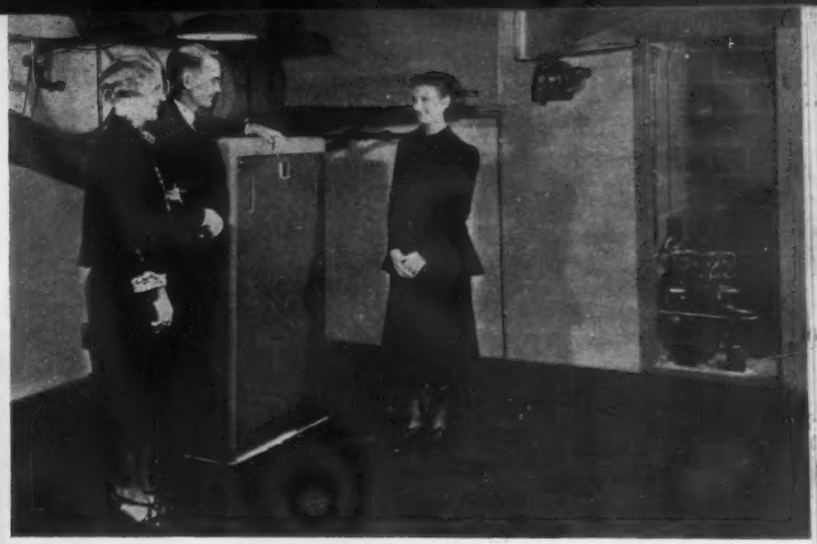
TO AID SALESMEN in analyzing customers' hot water requirements quickly and intelligently, the water heater section of Edison G. E. Appliance Co., Chicago, has produced a pocket-sized estimator called "The Water Rater." It automatically estimates the size water heater, approximate monthly kw.-hr. consumption and the total number of gallons used according to the maximum day's needs for the number in the family. The Hotpoint water rater is printed on polished celluloid. A dial turns to indicate data through die-cut openings.

●

TEMPERATURE RESEARCH FOUNDATION is the name of an organization founded by the Kelvinator Corp., New York. Established as a clearing house through which information is disseminated without charge, it includes on its staff specialists in health, economics, architecture, dietetics, design, and household management.

Kelvin Home in the West

A variety of exterior designs are offered for the completely air conditioned and electric kitchen equipped Kelvin home, several of which are to be built in the west soon, according to J. L. Conover



Designed to be built for about $7,000, completely equipped with either oil or gas fired boiler heating and electric refrigeration cooling, and electric water heating Kelvinator plans to start several homes in each Western community

Below: Kitchen of the Kelvin home, with electric range and refrigerator

Refrigerator Code Adopted in Denver

To end suicidal practices in the merchandising of refrigerators, 25 Denver retailers, representing 75 per cent of the retail outlets in the area, entered into a code agreement last month. Among its important provisions are a schedule of maximum trade-in values and the establishment of a code governing board with authority to determine guilt or innocence of those charged with violations, and to impose penalties established by the code.

Effective until Jan. 1, 1938, the agreement includes the Public Service Co. of Colorado, and leading department, music, electrical and furniture stores. It condemns:

Selling either current or succeeded models at less than prices established by manufacturers; ambiguous advertising as to year and model; selling other than current models without explanation to purchaser; free installation, wiring, or other labor except delivery; terms without carrying charges; paying more than 2 per cent for information leading to a prospect; splitting commissions or offering similar inducements to purchasers; making allowances in excess of code specifications.

Meter Tests Prove Low Cost of Appliance Use

More evidence of the actual low cost of cooking and heating water electrically has been developed from tests made by the Utah Power & Light Co. Separate metering of the devices has disclosed that from the consumer's standpoint ranges, refrigerators and water heaters cost very little to operate; that from the utility's standpoint the estimated annual revenue from these devices must be revised downward.

Taking an average of 100 domestic accounts, ranges were found to bring an average of $22 per year, refrigerators $7.26. On 20 water heater combinations with ranges the total cost to operate them was found to be $26.50. On water heaters alone for the year's average cost per customer it was found that $2.83 per month was the average. The most that the average arose was to $3.33 in June when there were 1,661 customers. This average billing of $2.83 represents 258 kw.-hr. of electricity.

This year it is planned to take 1,000 accounts throughout the system and to make a more complete study of the consumption of electricity by these various appliances. From a dealer standpoint these figures will be convincing proof of the low cost of operation of the electric home and its appliances either in combination or singly.

●

SEWING MACHINES sold to electric range cooking school prospects proved a surprising sales opportunity in Salt Lake City recently. K. Y. Myers, electric appliance manager for Z.C.M.I. retail store, conducted an electric range cooking school and found that many of the prospects secured at the school were anxious to buy sewing machines. Mr. Myers judged from this experience that many dealers are overlooking the possibilities of selling sewing machines to a receptive market which has not been cultivated thoroughly in recent years.

●

POSTPONED—San Jose Unit of the Electric Appliance Society, through its president, William C. Harvey, has announced a decision not to hold an electrical exposition in April as previously announced and anticipated. Sufficient space to justify the undertaking was not signed up and the Society in a special meeting March 11 decided to postpone the annual event.

●

"HOMES OF IDEAS", at Provo, Utah, a 5-room, low cost house project of Utah Power & Light Co., was given a formal opening last month. Although nothing about the house is elaborate, its appeal lies in its simplicity and complete electric kitchen. The dining and living rooms feature built-in lighting fixtures and indirect floor lamps. An electrically driven coal stoker, electric water heater, and laundry equipment make the basement equipment electric also.

●

SMALL, POCKET SIZE is a handy new Westinghouse illumination design handbook made available to the lighting profession by the commercial engineering department, Westinghouse Lamp Co., Bloomfield, N. J. Compactly arranged to give the maximum information in the least space, the book contains sections on interior lighting, sign lighting, floodlighting, and underwater and street and highway lighting practice. Illustrated by drawings and profusely supplied with handy tables to assist in quick calculations, the booklet should prove useful to every contractor or engineer doing any design of lighting installation.

"Seeing" and Pamphlets Available for Promotion

Offering lighting promotion departments a list of twelve folders or envelope stuffers as well as its booklet "Seeing," the Western Institute of Light and Vision, of which Frank A. Hansen is director, in Los Angeles, is circulating the industry with offers of such publications at very reasonable rates. The folders include one on better homes, another on offices, one on production, one on greater sales, one on beauty, one on gardens, one on recreation, one on safety, one on student lighting, one on better lamps, one on better bridge and one on happier holidays. A 1937 edition of the booklet "Seeing" is also offered and contains some new illustrations, a new type dress and cover, a page on paint and decoration and otherwise brought up to date. All of these publications are designed to tie in with the Better Light-Better Sight idea.

●

"LIGHTING FOR SEEING IN THE OFFICE" is a new bulletin of the General Electric Co., Nela Park Engineering Department, Cleveland. Beginning with the seeing approach, the bulletin discusses lighting for casual, usual, and for critical seeing. The booklet is designed to be presented to office and commercial prospects.

PAYS FOR ITSELF—AND HOW! —by Russell

"I'll take this one—and you can send me the difference any time"

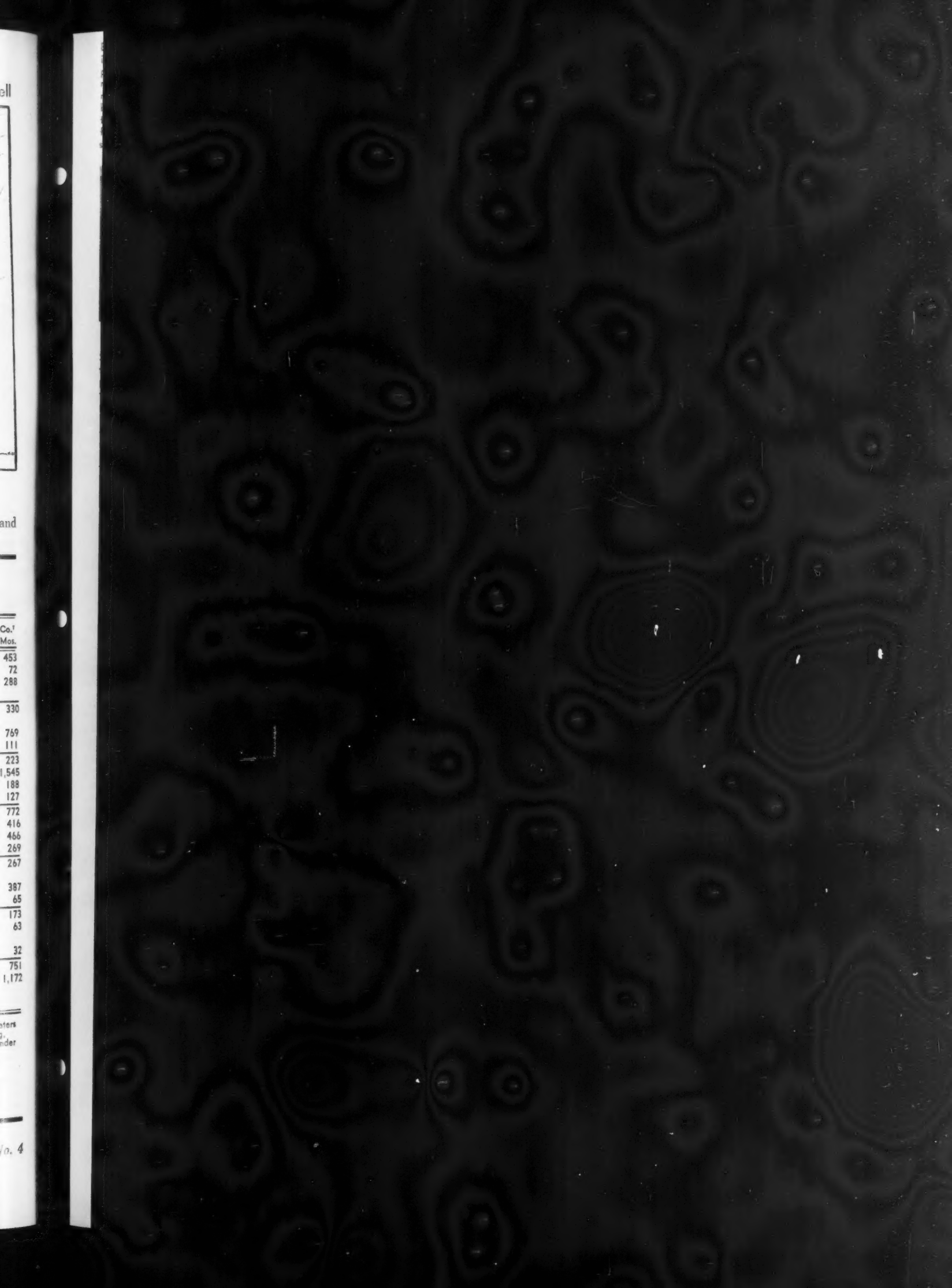
APPLIANCE SALES REPORTS

A Summary of Dealer and Utility Reports Compiled by Associations, Societies, Bureaus, or Dealer Contact Department of Utilities

February, 1937	P. G & E. Co.[1]		San Diego Cons. G. & E. Corp.[2]		San Joaquin Lt. & P. Corp.[3]		So. Calif. Edison Co. Ltd.[4]		Utah Power & Lt. Co.[5]		Wash. Water Power Co.[6]		Idaho Power Co.[7]	
	Current*	2 Mos.	Current	2 Mos.	‡Current	‡1 Mo.	Current	2 Mo.	‡Current	‡1 Mo.	Current	2 Mos.	Current	2 Mos.
Ranges	212	525	55	120	121	121	444	826	138	138	123	211	366	453
Water Heaters	162	375	58	113	73	73	211	449	15	15	41	110	52	72
Air Heaters, aux.	1,850	4,949	275	775	150	150	369	1,558	396	396	161	554	78	288
Air Heaters, 220	130	262			130	130								
Refrigerators	2,098	4,052	400	775	155	155	2,157	3,998	208	208	270	434	212	330
Dishwashers	12	31			1	1			1	1	1	1		
Washers	2,139	5,004	300	600	256	256	2,388	4,818	790	790	324	603	402	769
Ironers	539	1,398	60	125	49	49	358	868	30	30	32	63	57	111
Vacuum Cleaners	2,353	5,217	185	385	115	115	1,061	2,276	656	656	231	393	122	223
Radios	3,867	25,737	1,050	2,200	538	538	4,089	9,199	1,543	1,543	1,199	2,365	742	1,545
Mixers	523	2,876	100	190	51	51	302	803	331	331	119	286	82	188
Cookers, Casseroles			45	95	18	18	53	155	94	94	213	361	12	127
Irons			425	825	214	214	1,268	2,741	1,109	1,109	580	1,160	409	772
Waffle Irons			225	425	77	77	418	1,092	466	466	155	311	173	416
Toasters			250	500	107	107	589	1,420	532	532	334	622	244	466
Table Stoves			60	130	68	68	241	607	940	940	121	429	105	269
Heating Pads			250	650	127	127	351	1,151	485	485	162	353	90	267
Curling Irons							63	132	443	443				
Coffee Makers			250	500	94	94	322	736	598	598	291	598	203	387
Sewing Machines	1,097	2,354	65	140					138	138	54	102	24	65
Clocks			425	750	113	113	473	1,080	512	512	416	617	66	173
Fans					5	5	16	47	8	8	20	56	4	63
Floor Polishers														
Sun Lamps							47	119	20	20	8	9	10	32
Reflector Lamps					163	163			1,432	1,432	1,019	2,358	365	751
Miscellaneous Lamps					135	135			1,095	1,095	482	1,491	564	1,172
Yard Lights					11	11								
Misc. Small App.					197	197	628	1,377						

APPLIANCE

[1] P. G. and E. reports obtained only on major appliances upon which accurate reports are available from dealers' accounts. Ranges, water heaters, and air heaters include company and dealer sales. Total dealers include gas as well as electric dealers. *Previous month's figures shown under current month's heading.
[2] Gathered by Bureau of Radio and Electric Appliances of San Diego County. Estimated monthly sales figures used in this table. Clocks, fans included under miscellaneous.
[3] Includes dealer reports from Midland Counties Public Service Corp. territory also. Compiled by Valley Electrical Supply Co.
[4] Includes reports from dealers on San Joaquin Valley system of the company as well as Southern California areas served.
[5] Includes Utah Power & Light Co. territory in Utah, Idaho and Wyoming. Also Western Colorado Power Co. territory.
[6] Dealer sales only for Spokane and company's territory. Company sales not included. Table stoves, grills included with cookers.
[7] Figures compiled by Electrical Equipment Sales Association. Include power company sales and sales of all reporting dealers—about 60% report.
‡ February report not available at time of going to press.



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No. 4

EXPOSITION — The cooperative dealer show, made a big public event, is the strongest mass stimulator of interest in new models; the best bush beater for new prospects. Get together with other dealers for a local refrigerator exposition

STORE SHOW — Department and other large stores find cooking schools and store shows pay. They expose the new merchandise to great numbers, create desire and secure prospects for the salesmen to call on and close

STYLE SHOW—Sure to attract women is a style parade. A joint promotion with a women's wear store or department is fine if attractive kitchen frocks are modeled, and the "well dressed" kitchen is stressed in the refrigerator presentation. That appeal keeps the refrigerators from being outshone by the dresses

MODEL KITCHEN — Every prospect can be given a personal show of her own when the store has a working model kitchen, in action. (See last page of this guide.) In a kitchen setting, the prospect can visualize her own kitchen. The tasty food samples convince skeptical husbands; encourage prospects to desire similar results

INSTRUMENTS — Convincing proof of economy of operation has been given by use of instruments in making a personal sales presentation. Displays using such meters have also attracted attention, either on the floor or in windows. In using such devices be sure you interpret what the figures mean in terms of the purchaser's own self-interest—"food savings at even less operating cost, a double benefit"

MASS DISPLAY—A store showing of all models in a mass display is always impressive. When a dealer can stage one he can obtain excellent publicity from it if planned carefully with advertising and news releases

WINDOWS — Every dealer can make fullest use of his windows. When displaying refrigerators concentrate on one idea. Make the window simple, dramatic. A cardboard cut-out like this is easily made, tells the story of ice so quickly even those who drive by, night or day, can catch it on the run

ELECTRICAL WEST COOPERATIVE

APPLIANCE SALES GUIDE

Copyright 1937 by Electrical West, 883 Mission St., San Francisco

Seven Time-Tested Display Methods

to sell more of your line of Refrigerators

March 193

REFRIGERATOR

Remember—your prospect wants:

(so sell in term of these)

- Health— protection for the family's food
- Foods— kept sweet and appetizing
- Spoilage— prevented for long periods
- Safekeeping—of left overs and extra quantities
- Attractive— ways to serve left overs
- Time saved— in preparing meals
- Extra quantities— cooked at one time
- Quick way— to provide for unexpected guests
- Children's lunches—easily made, even by themselves
- Steps saved— by having all foods close at hand
- Good Hostessship— entertain guests graciously
- Plenty— of cool drinks in summer
- Frozen desserts— to vary the menu
- Beautiful— kitchen furniture
- Clean food— away from ants or dirt
- Portable— can easily be moved to new home
- Less need— for servants
- Economy—of owning and using as well as buying
- Pays for itself— when used fully
- Sales specials— can be stored safely
- Larger sized cans—can be bought with economy
- Saves trips— to market
- Avoid— uneconomical last minute buying
- Less traffic—worry and danger, shop once a week
- Pride— in being modern and having the best
- Preserve— elusive vitamins in foods
- Enhances— value of the home

SHORT SALES TALKS
That hurdle Sales Resistances

NUMBER 4A — REFRIGERATORS

When the prospect says—

Prospect: **"We have a refrigerator now. I was just looking around. These are very nice, but I am not really in the market for a new one just yet."**

THERE are several variations of this idea. The salesman may run into it on a home canvass, or it may come from a casual visitor to the store or department. It is easy to take this sort of answer at face value, back away, and neglect to find out if the interest isn't really deeper than the prospect wants to admit. But good salesmanship at least makes the effort to develop this latent interest into a sale—at least welcomes the chance to plant some good sales points in a prospect who may some day come back to buy. That is what Bill thinks.

BILL SMITH: "They are attractive, aren't they? Can't you just see it in all of its up-to-date style gracing your kitchen? You would be real proud of this new model, I am sure. I am glad you already have a refrigerator, for you know from real experience what a valuable helper it can be to you, saving foods, keeping them fresh so long, providing you with a quick way to fix up a tasty dessert, protecting the health of your family by keeping the food supply safe. Do you have sufficient space in your present refrigerator to get the real benefit of quantity buying? That is more important than ever these days with food prices on the rise. How large is your refrigerator, may I ask?"

PROSPECT: "We have just a small one. I'm afraid that I do not take advantage of all of the things I might do with my refrigerator. That is one of the reasons I should not care to invest in another for some time."

THIS is a common occurrence—and it does not do the refrigerator business any good when it persists. The owner who makes minimum use of the refrigerator does not get her money's worth out of it and often knocks electric refrigerators to her friends. It is a challenge to any salesman who intends to continue selling refrigerators to sell full use and enjoyment of the refrigerator—often by selling a really adequate new model.

BILL: "That is too bad. I know how you feel about it. If you find it inconvenient to store a good supply of fresh vegetables and food, and thus save you trips to the market, it is because your present refrigerator, while it seemed large when you first had it, is inadequate for the really complete service it should perform for your home and family. When we say that a refrigerator pays for itself, we mean that if you have a model of ample capacity, like this one, it becomes easy for you to buy just once a week—saving you traffic worries and running back and forth—to buy specials where quantity gives you a better bargain, to buy larger sizes of canned goods, knowing that you can store the surplus safely for days. Leftovers, ordinarily may seem like a problem, but with the clever, easy recipes in this book you can convert them into really artistic molded salads and desserts. Why not let me come out to your house some evening and talk to you and your husband about a practical, workable way to meet the increased cost of living by using your refrigerator to better advantage?"

When the prospect says—

Prospect: **"Thank you for showing this one to me. I do not want to make any decision though until I have seen several makes. I may be back when my husband and I have talked it all over."**

● Opportunities for salesmen and dealers still are rich in the refrigerator business. Despite tremendous sales each year for the past ten years, and a reasonably high saturation of users, dealers are learning that the market is wide open for the replacement of now out-dated models, and that there are still millions of people in the country who have yet to buy their first refrigerator. Manufacturers all have geared up for record production schedules, and never before has there been so much refrigerator advertising in national magazines and local papers, over the radio and on the screen. All this means a constantly stimulated market to the wide awake dealer and salesman. It remains only for him to contact the prospect, and to close the sale. To get the order though, he finds he has to overcome frequent obstacles or sales resistances. Here are a few of the inevitable ones, and how an expert salesman, Bill Smith, meets and overcomes them. Note particularly that he overwhelms the resistance with benefits—the things that the refrigerator will do for the purchaser. See, also how he avoids argument or contradiction. Regard also how he asks for the decision frequently, finding that this is a way to check what progress he has made, and to dig out the hidden resistances so as to hurdle them too.

HOWEVER she says it, if the prospect gives a clue that she is shopping around, comparing one feature against another, the salesman faces one of life's darkest moments unless he knows how to close. His time is wasted, and so is his prospect's Many salesmen make the mistake of showing their disappointment and thoughtlessly let out a remark which may ruin their chances of ever selling that prospect anything again. Here is a way which Bill Smith has found brings the shopper to a quicker decision.

BILL: "I can understand your wanting to see other makes too; that shows you are a discriminating buyer, and a real judge of values. Have I made it clear how your work will be made easier, your meals more attractive and appetizing, and your family's health safeguarded by the use of this refrigerator? I am sure that you will find this to be true. All of the well known makes of refrigerator will give you excellent service and a variety of special features. One may have some little feature that is special and very appealing. I have just shown you those of our line. Investigate them, by all means, and then come back to me and let me see if this refrigerator does not provide you the same service in perhaps some little different way. There is one assurance I do want to give you, and this is that if you start using this electric refrigerator today you will save yourself many steps around town, possibly quite a bit of confusion, and you will begin to experience its real service and benefits right now instead of later. What you want after all is a complete peace of mind about the state of your food, about its freshness and appetizing appearance, the knowledge that you can store it safely for days in quantities suitable to your needs, whether you are home or not to watch it. You want to be able to save your precious household money on food cost, both as a hedge against the increased cost of food and perhaps, as a little money for other household or personal needs. As long as there is this assurance right now with this refrigerator, why subject your feet to all the shopping it will take? Why not let me deliver this model to your home tomorrow and breathe a big sigh of relief that this problem is in safe hands from now on?"

When the prospect says—

Prospect: **"The price is high. I can get a..... for much less."**

MOST common of the salesman's hurdles is this one. Sometimes the price of the other make is lower, sometimes the customer is just jockeying for a deal. No use getting panicky, for this is a situation that arises every day. Better far to learn to meet it and overcome it. See how Bill Smith tackles it.

BILL: "The price is high? I can see that it might seem so until you could see, as I do, what a wonderful value you will get for that amount. Let me review what this refrigerator will mean to you every day. It will protect health by preserving the food of the family, save you money in food that otherwise might be spoiled, enable you to purchase quantities and save money by taking advantage of specials. It will save your time in the preparation of meals and desserts. You will find it an invaluable aid in entertaining, good hostesship. It is clean, safe and it will be a graceful addition to your kitchen. Moreover, it is completely portable and if you decide to move it about or move to a new home you can take it with you without fuss or bother about fuel supply. If you decide to modernize your kitchen it will become a unit of the all-electric modern kitchen. With all of these considerations, I feel sure that you will find this one of the most economical investments you ever made. Why not let it start paying for itself right today in your own kitchen? Suppose I send it out to you this afternoon?"

SELLING requires a marshalling of good features to overcome the walls of resistance that the prospect consciously or unconsciously sets up against buying too easily. In meeting any obstacle this technique of overbalancing the objection with advantages is the most effective method for sure and lasting results. TRY IT.

CALIFORNIA OREGON POWER CO. · PORTLAND GENERAL ELECTRIC CO.
MOUNTAIN STATES POWER CO. · PUGET SOUND POWER & LIGHT CO.
PACIFIC POWER & LIGHT CO. · IDAHO POWER CO.
NORTHWESTERN ELECTRIC CO. · WASHINGTON WATER POWER CO.
UTAH POWER & LIGHT CO.

Above—Well dressed, ready to sell. Below—Meat and vegetables for the week.

DRESS UP

a refrigerator with food to sell Food Savings idea

• Dummy food may do in a window display, but really to sell the idea that a refrigerator pays for itself, dress up one 7 or 8 cu. ft. model with a live display of real food. Here's how:

• From grocer and butcher buy or trade for a week's supply of food for 3 people. (You can take it home Sunday and use yourself.) Include 1 qt. ginger ale, 1 qt. or 4 cans beer, (to tell of keeping prepared for entertaining unexpected guests), a No. 2½ can of fruit salad, 1 qt. cocktail sauce, 1 can crab, shrimp, lobster, (explain—to prepare a salad quickly without a trip to the store) a No. 2½ can each of pineapple juice, grape fruit, and tomatoes (point to savings in buying a larger sized can and storing the surplus).

• Fill 2 vegetable crispers, one with cooking vegetables, one with salad vegetables; washed, well drained, attractively arranged; cover with cellophane.

• Make a quart jar of vegetable puree, using trimmings from vegetables displayed in crisper. Tell how this is all ready for making soup, free, on what would otherwise be thrown away.

• Fill left-over dish with mixed bits of cooked vegetables, another with bits of fruit, to illustrate saving of left overs.

• Make one gelatin mold with fruit, one with vegetable left overs, showing attractive use of these. Cut in squares any left over gelatin, place in sherbet dishes to show desert ready for one meal.

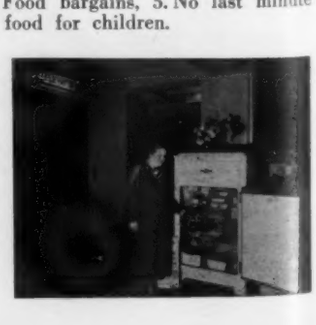
• Fill defrosting tray with steak, chops, sausage; four day supply for three people (cover with cellophane). A roast for two days. (Explain 7th day is either fish day or a free meal from left overs).

• In Pyrex dishes with covers show advance meal preparation, (shelled peas, shredded vegetables, all ready to cook. Explain soup stock came from trimmings. Tell of time savings by preparing vegetables all at one time). Make quart jar cream sauce for vegetables.

• Make two quarts frozen dessert each day—1 of ice cream, 1 sherbet. Always have 1 qt. perfect ice cream ready to serve. Make one or more half pint jars of chocolate, pineapple or fruit sauce for ice cream.

• Make batch of cooked ice cream base and display in left over dish to show how quickly and easily ice cream of any flavor can be made for unexpected guests. (Use standard cooked ice cream recipe, including ¾ cup sugar, 3 tbs. corn starch, pinch of salt, 1 cup boiling water, 2 egg yolks—holding out 1 cup whipping cream, 2 beaten egg whites, and flavoring. Prepared in top of double boiler, mix sugar, corn starch, add boiling water slowly, cook over low heat until clear and thick. Pour little of mixture over slightly beaten egg yolks, stir to cook eggs slightly, not in lumps. Return egg mixture to double boiler, cook over water until well blended; chill. This is excellent base that won't get grainy. Explain that adding whipped cream and beaten egg white and flavor takes only minute. Already chilled, ice cream is made in just a few minutes. This is highest quality ice cream at cost of far less than poorest grade commercial.)

• Close sale by assuring customer a refrigerator pays for itself in 1. Quantity buying, 2. No waste through spoilage, 3. Use of left overs, 4. Food bargains, 5. No last minute shopping, 6. Appetizing food for children.



Display the dressed refrigerator in the most active part of the store; place a well-trained, pleasing hostess in charge, supply her with good literature and the refrigerator will practically sell itself

Astounding Market Promises Expanding Sales and Load

Statistics Show 50 Per Cent Saturation Possible. Over 500,000 Units Now Connected to Lines of Western Utilities. Sales in 1936 Exceeded 50,000 Ranges and 20,000 Water Heaters. Range Replacement Market Looms Large

ELECTRIC range and water heater sales have just begun! This optimistic statement is proven by ELECTRICAL WEST'S market survey, which dispels all doubt concerning the future business and revenue to be gained from their sale and all guess work about their saturation. The West is acknowledged nationally as the leader in the sale of ranges and water heaters. Here the range saturation of 14.3 per cent is almost twice the national figure. A water heater saturation of 5.6 per cent is far above the national average. These figures, high as they are, indicate a large potential market for development in view of the far higher saturations that have been achieved by many companies.

Concerning the survey *per se*, outstanding is the response and cooperation of Western utilities in making data available. The 41 companies reporting represent over 95.6 per cent of the total domestic customers in the eleven Western states taking service from central station lines.

Saturation

FOR the first time definite figures on saturation become available. Approximately one customer in seven cooks electrically and one in 17 heats water electrically in this territory. Among the 2,495,148 customers served by the companies reporting, there are 357,606 electric range users and 136,046 electric watre heater users. Saturations are 14.3 and 5.6 per cent, respectively. Excluding California, where the wide availability of low cost natural gas undoubtedly has been a factor militating against greater acceptance, the ratio of cooking customers to total customers decreases to one to four, a 25 per cent saturation. Customer acceptance, particularly in Washington, Oregon, Idaho and Utah, is responsible.

Outstanding among the utilities, from the standpoint of range saturation, are the Eugene (Ore.) Water Board, with a range saturation of 63.5 per cent among its 6,797 customers, and the Sierra Pacific Power Co., whose 4,409 range users raise its saturation to 46.6 per cent. These figures indicate the possibilities for future development.

Among the larger companies, Idaho Power Co. leads the way with 20,502 range users and a saturation of 47.2 per cent. The Salt River Valley Water Users Assn. and the Turlock Irrigation District follow close behind with a saturation of over 40 per cent. California Oregon Power bids for leadership with a saturation of 36.6 per cent, with Washington Water Power and the cities of Seattle and Tacoma following, all of which have a range saturation above 30 per cent. Numerically, the Pacific Gas and Electric Co. has the greatest number of cooking customers, the total being 37,990 out of 559,282 domestic consumers. Puget Sound Power & Light Co., with 153,418 domestic customers, numbers 36,948 connected ranges, making a 24 per cent saturation.

Water heaters do not yet enjoy the same customer acceptance as the range, the total saturation being 5.6 per cent. Of the 136,046 total units on the lines, the Pacific Gas & Electric Co. leads with 17,795 units connected, with the Seattle Lighting Dept. as runner-up with 17,699 customers. That water heaters will soon be raised to a par with the range as a sales leader is indicated by the rapid growth in annual unit sales described hereafter.

Sales and the Market

THE West is the best market for ranges and water heaters in the country. Supporting this statement is a comparison of national to local figures on sales. In its January issue, *Electrical Merchandising* reports national range sales for 1936 as 308,000. The sales in the eleven Western states, representing but 12.7 per cent of the domestic customers, totaled approximately 55,000 or 18 per cent of the total U. S. Water heater sales bear a still better relationship, the Western sales in 1936 being estimated from the survey as 24,500 or 23.7 per cent of the total of 104,000 units sold in the U. S. Interesting and indicative of the high degree of cooperation between the dealers and utilities is the fact that range sales reported were split between the two almost equally, the dealers selling 25,585 and the utilities, 27,374 units. On water heaters, the dealers made considerable gains in sales in 1936, their share being 7,954 units of the total of 23,241 units reported sold.

Replacement increases the market possibilities, particularly on ranges. Companies with high degree saturation estimate the replacement sales to be as high as 50 per cent. Granting continued gains in total users, the replacement market guarantees manufacturers, wholesalers and dealers a large, profitable and continuous outlet for electric ranges.

Growth Inevitable

BASED on performance, it is conservative to estimate that a 25 per cent saturation of these two important appliances is not improbable and appreciable higher saturations are possible if continuous and aggressive efforts are maintained.

Reliable forecasts for 1937, based on the accompanying figures and the increased business budgeted by the manufacturers, indicate that total sales will equal 65,000 ranges and 27,500 water heaters. Conservatively stated in another manner, the West can be expected to absorb between 90,000 and 100,000 units per year for the next several years. This represents a dollar volume of approximately $13,000,000 at current retail prices. Of this amount, electrical dealers can be expected to enjoy an increasingly larger share if merchandising methods and policies continue along the present trend. Should a 25 per cent saturation be realized, there would be some 600,000 range and water heater users in this territory. Using the average replacement percentage of 15 per cent, the replacement market alone eventually would represent 9,000 ranges and an equal number of water heaters annually.

Cooking rates vary from 3 to 1.5 cents per kw.-hr. Water heating runs the gamut from a flat rate of 0.35 cents per watt per month to 0.75 cents per kw.-hr., offpeak. Three companies

Western Utilities Report Range and Water Heater Progress

SYSTEM	Domestic Customers 1937	Ranges Connected 1-1-37	Percent Saturation	1936 Range By Company	Sales By Dealers	Percent Replacement	Water Heat. Connected 1-1-37	1936 Water Heat. Sales By Company	By Dealers	Percent Saturation	Av. Annual Kw.-Hr. Consumption '36	Cooking Rate Step c Kw.-Hr.	Wtr. Heat. Rate Step c Kw.-Hr.
Alameda (Calif.) Bur. of Elec.	10,058	1,107	11.0	310	50	10	150	50	...	1.5	958	2.2	1.0
Anaheim (Calif.) Mun. Lt. & Water Dept.	3,219	66	2.1	....	28	..	9		4	0.3	548	2.5	1.0
B. C. Electric Railway Co., Ltd.	83,601	10,430	12.5	558	100	40	3,162	166	15	3.8	1,009	2.0	0.8†
California Oregon Power Co.	23,568	8,612	36.6	2,215	52	11	3,882	664	20	16.5	1,821	2.0	a*
Central Arizona Lt. & Power Co.	22,123	2,119	9.6	47	159	10	500	18	39	2.3	957	3.0	2.5
Eastern Ore. Lt. & Power Co.	5,690	1,127	19.8	228	22	5	166	53	1	2.9	665	2.5	1.5
Eugene (Ore.) Water Board	6,797	4,324	63.5	....	...	..	1,013	...	...	15.0	1,834	2.0-1.3	*,6
Glendale (Calif.) Pub. Service Dept.	21,186	1,502	7.1	124	239	1	135	45	40	0.6	763	1.5	0.75
Grays Harbor Railway & Lt. Co.	9,266	884	9.5	40	6	20	...	8	...	..	535	3.0	1.5
Home Gas & Electric Co.	5,281	1,128	21.2	162	4	5	170	...	...	3.2	761	2.0	1.0†
Idaho Power Co.	43,470	20,502	47.2	2,162	2,216	36	7,546	2,223	295	17.4	1,410	2.0	1.0†
Los Angeles Bureau of Pwr. & Lt.	203,670	5,881	2.9	....	2,403	4	1,624	...	741	0.8	692	1.5	0.75†
Modesto Irrigation Dist.	7,031	2,500	35.5	....	391	10	1,100	...	193	15.7	1,614	2.0	1.0
Montana Power Co.	62,447	12,905	20.7	1,027	...	..	...	40	...	..	781	..	..
Mountain State Power Co.	39,484	8,716	22.0	1,746	50	10	2,040	442	20	5.2	1,070	3.0	a*
Northwestern Electric Co.	32,633	12,100	37.0	67	1,587	22	1,583	200	112	4.8	1,242	2.0	0.8†
Pacific Gas and Electric Co.	559,282	37,900	6.8	1,829	2,404	8	18,795	1,578	977	3.4	781	2.2	1.2
Pacific Power & Light Co.	48,773	9,754	20.5	1,101	490	15	6,624	856	175	13.6	1,382	3.0	0.8†
Palo Alto (Calif.) Mun. System	4,500	250	5.5	...	5	..	40	..	1	0.9	..	2.5	1.0
Pasadena (Calif.) Mun. Lt. & Power Dept.	25,974	602	2.3	...	165	1	194	..	119	0.7	800	1.5	0.75
Port Angeles (Wash.) Lt. & Power Dept.	3,200	587	18.0	...	86	20	40	..	30	1.3	1,080	3.0-2.0	0.75†
Portland General Elec. Co.	99,650	22,216c	22.3	1,810	2,170	..	6,361	1,492	100	6.4	1,160	1.8	0.8†
Public Service Co. of Colorado	105,048	4,250	4.0	556	200	..	225	35	10	0.2	570	3.0	1.5†
Puget Sound Power & Light Co.	153,418	36,948	24.0	4,653	1,024	22	14,878	2,161	462	9.7	1,121	2.5	0.75†
Riverside (Calif.) Light Dept.	9,356	552	5.9	...	180	..	73	...	31	0.8	768	2.2	1.3
Salt River Valley Water Users' Assn.	5,216	2,100	40.4	...	...	..	175	..	..	3.4	1,612	2.5	2.0
San Diego Con. Gas & Elec. Co.	67,927	3,637	5.4	515	205	25	2,284	565	134	3.4	733	2.5	1.0
San Joaquin Lt. & Power Corp.	80,107	11,200	14.0	...	1,803	14	6,400	...	951	8.0	1,100	3.0	1.2
Seattle Lighting Dept.	82,878	29,748	35.9	2,622	...	20	17,699	1,420	...	21.4	1,125	2.0	0.75
Sierra Pacific Power Co.	9,455	4,409	46.6	21	796	13	1,124	8	181	11.9	1,201	3.2	1.5
Southern California Edison Co.	411,882	35,000	8.5	...	6,575	10	14,000	600	3,002	3.4	807	3.0-2.0	1.0
Southern Colorado Power Co.	21,418	3,984	18.5	400	8	15	828	200	...	3.9	682	2.5	1.0
Tacoma Dept. of Public Utilities	30,436	9,644	31.6	615	...	20	6,738	225	...	22.1	1,614	1.0	1.0
Trinidad Elec. Trans. Ry. & Gas Co.	4,272	175	4.1	20	...	5	...	...	...	..	531	3.0	3.0
Tucson Gas, Elec. Lt. & Power Co.	11,113	2,000	18.0	...	109	5	1,000	...	47	9.0	812	3.0	3.0
Turlock Irrigation District	6,585	2,690	41.0	133	...	50	...	110	...	..	1,749	2.0	1.0
Utah Power & Light Co.	96,896	27,066	28.0	2,815	1,205	25	2,530	912	68	2.6	877	2.5	1.0†
Vallejo Elec. Lt. & Power Co.	6,659	...	..	72	2	..	...	11	...	..	844	2.4	1.0
Washington Gas & Elec. Co.	3,500	870	24.9	65	5	35	150	26	...	4.3	933	3.0	0.8†
Washington Water Power Co.	61,564	19,001	30.8	1,454	746	50	12,658	1,278	181	20.5	1,775	3.0	0.8†
West Coast Power Co.	14,000	1,800	12.9	150	100	10	50	20	5	3.6	490	2.5	1.0†
Total Reporting (95.6 per cent)	2,495,148	357,606	14.3	27,374	25,585	..	136,046	15,287	7,954	5.6	...	..	..

† Off-peak service. * Flat Rate. a—Flat rate charge 0.35c per watt per month. b—Flate rate charge $3.50 per kw. per month. c—Excludes 3,200 ranges in 6,478 apartment units served by company where individual units are not counted as domestic customers since tenants are supplied by or purchase electricity from the apartment house owner.

use the flate rate, fourteen favor offpeak rates, and the remainder bill on a straight kw.-hr. charge in water-heating blocks ranging from 3 to 0.75 cents. High rates do not seem to deter high usage of electricity for electric cookery as one company, with a 3-cent cooking rate enjoys a range saturation of over 30 per cent. Generally speaking, the companies employing offpeak water heating rates have a much higher water heating saturation than the others. Competitive fuels in certain localities, such as Los Angeles, very likely account for the low water heater saturation despite the very low 0.75-cent offpeak.

It should be gratifying to the electrical industry as a whole to study the data in the accompanying table. Therein is a record of pioneering that has produced results in the way of new business for every branch. It is a record that promises still greater rewards for future sales efforts.

All Industry Joins in Symposium to Build Business

THERE were five of us in a hotel bedroom. It was one of those chance sessions, where behind closed doors, the past and the future of the industry are cussed and discussed, where problems are defined and settled in a single sentence. The cocktails had been stimulating, the dinner excellent. Now the air was smoke-filled. Conversation had run the gamut of politics; we had settled the fate of the holding companies; fished and hunted by way of diversion.

Someone raised question as to the future of the range and water heater business—natural in this instance, since the group consisted of two utility commercial men, the district manager of a range manufacturer (who, as might have been expected, had bought the dinner) and a wholesaler. During the next two hours Roman riders, free wiring, long terms, lower prices, reduced rates, dealer cooperation, a national industry promotional campaign—each of these and many other phases of the range and water heater problem held the spotlight. There was a wide divergence of opinion—in fact on no subject was there any unanimity.

Thus the idea of this symposium was born. To more than a hundred experts —salesmen, dealers, distributors, manufacturers and commercial men—this question was addressed: "What should the industry do to increase the range and water heater business?" A closed-door hotel room, frank and free expression of opinion was solicited. At the request of the writers some of the statements must remain anonymous. But each and every one of them comes from an expert and each is offered as a possible means of arousing consumer interest, increasing sales and load.

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Manufacturers Take Broad View Emphasize Inter-relations

DURING fifteen years experience in the marketing of electric ranges and water heaters west of Denver I have seen problems solved and other problems that have not been entirely solved during that period," writes P. R. Ross, western division manager A. J. Lindemann & Hoverson Co.

"Regardless of all this, the electric industry has still a long way to go before it receives the maximum amount of business in appliances.

"Electric ranges are not being sold "over the counter." The market exists where new homes are being constructed and where old homes are being remodeled. The owner of an old home, or the renter, is rarely induced to invest in the necessary wiring for electric ranges or water heaters. The builder of a new home or the contractor who constructs homes for sale, is rarely interested in the wiring of these homes for electric ranges or water heaters. In fact, in the majority of cases architects and contractors practically belittle electric cookery. The average person building a new home puts his faith in the contractor and usually abides by his recommendations.

"I am convinced this is the field that requires energetic activity to arouse consumer interest. When contractors and architects become enthusiastic on electric cookery this problem will also be solved."

●

Load Factor Determines Sales

Lower domestic rates are broadening the market for electric ranges and very soon we will be called upon to justify the capital invested in serving ranges unless we can "beat the gun" by selling electric water heating and space heating to bring the annual load factor up to about 40 per cent.

The 5, 7½, and 10 kw. transformers with heavy three-wire services, and 30 or 50-amp. meters must now fall under the order "load existing facilities."

A lot of heating can be folded into a system having high range saturation, beween campaigns and during campaigns.

Utility management has been generous in extending service, and patient during the depression, but as rates go down management itself is more and more on the spot.

Better annual load factor is the order of the day and every new rate reduction will emphasize the need. Future programs must foster full usage. Rates are no longer so-called "merchandise rates" but are "greater usage rates."

The more simple the rate the faster the acceptance of the service. Complicated, restricted rates for water heating are out.

Electric water heating is a simple service and its 1½ to 3-kw. load and 12 kw.-hr. a day consumption should not scare us into pages of conditions and restrictions that stymie sales by making the heaters cost twice what they should.

The water heater helps to justify the range, and automatic space heating makes all three services attractive by boosting the annual load factor, and by making satisfied consumers who place comfort ahead of sanitation and convenience. We have been trying to reverse the order but the consumer is away ahead of us all the time. Someone has said, "Find out where the people are going and then take them there." Here is our chance to do just that before someone else does it for us.

W. Wesley Hicks, President
Wesix Electric Heater Co., San Francisco

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Stop Knocking Ourselves

I have just completed a trip over eight western states, calling on dealers, distributors and power companies, and in a number of centers attended range meetings. I am sorry to say so, but I honestly believe the electrical industry is doing the electric range more harm than the gas men. By this I mean that so many are telling Mrs. Buyer that if she doesn't buy their range with the so and so or this or that, she will never

† Off-peak service. * Flat rate. 2—Flat rate charge. units are not counted as domestic customers since tenants are supplied by or purchase electricity from the apartment house owner.

be happy. We all know that any one of the many makes of electric ranges handled in the West is far superior to the best gas range made, so why not try and get the industry to talk more about electric cooking and its advantages instead of knocking every make except the one being sold. Power companies can correct this by withdrawing their support from the dealer or distributor using that knocking method.

With the power companies in most sections coming out with real attractive commercial cooking rates for the smaller places like tea rooms, barbecues, wayside inns and dance places, I sincerely hope they will demand that heavy duty equipment be used, otherwise domestic ranges (even second-hand ones) will be installed and not give satisfaction.

W. P. Swartz, Pacific Sales Manager
Standard Electric Ranges, Los Angeles

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Stop Thinking Price

Unwarranted price consciousness throughout all branches of the industry is the greatest single deterrent to greater expansion of the range and water heater market. We are more worried about the consumer's ability to pay than we are in his desire for the service we have to offer. As far as apparatus is concerned this price consciousness is definitely retarding the market.

Only by increasing the number of outlets displaying and selling ranges and water heaters can we expect to expand our sales. To interest these additional outlets, we must be able to assure them of a reasonable profit. The margin which will assure this profit does not exist with the present low prices, which are the product of our price consciousness. If the customer is sold on the *service*, he will not question a fair price for the appliance.

Another thing which is restricting sales expansion is the failure of the industry to use its own service. So before attempting to electrify the American home, let's have a campaign to electrify the electrical industry.

H. H. Fogwell, President
Thermador Electrical Manufacturing Co.

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Emphasize the Best

My suggestion is that utilities and dealers use their newspaper and display advertising to feature the finest models in any given line of ranges or water heaters. This procedure would create customer desire for the most modern conveniences. The cheaper end of a line would then take care of itself.

J. P. Davidson, Pacific Manager
The Estate Stove Co., Los Angeles

Distributors Point Out Need for Cooperation, Information

DOUBTLESS all will agree that many salesmen enthusiastically promoting the use of electrical ranges and water heaters will increase that business more rapidly than if it were promoted by only a few. No one can anticipate the great results which would be obtained if all electrical people were enthusiastically promoting such sales.

The writer believes that to obtain maximum beneficial results a separate meeting should be called for each branch of the industry, affording all in that branch the opportunity of free and frank discussion regarding what that branch should stand to gain through enthusiastically and aggressively promoting sales.

Dealers, wholesalers, factory representatives and utilities might each appoint a committee to meet with a similar committee from other branches and jointly discuss the recommendations of each. When a plan is found satisfactory to all branches, it should be explained to everybody in the electrical business.

●

Gain Utility Support

In my opinion, the rate at which this business can be developed is largely dependent upon the attitude and efforts of the local utility. It is my belief that the utility should be active in the sale of ranges and water heaters, and encourage dealer participation. It seems logical that the more outlets we have showing, advertising and talking the sale of these items, the better reception we are going to have by the buying public.

One of the methods used successfully in the Intermountain territory has been a trade-in allowance on old equipment, under which the utility pays to the dealer and the dealer passes on to the customer a cash allowance for trading in old equipment.

These campaigns are supported by a strong advertising program, entire cost of which is borne by the utility. The dealers, of course, run tie-in advertising. As a result of this splendid cooperative effort, during 1936, 46 per cent of our total range business in this territory went through dealer channels.

D. M. Salsbury, Manager
Westinghouse Electric Supply Co.
Salt Lake City

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Educate General Salesmen

Every woman has in the back of her mind the desire for an electric range. But when she goes to the gas man, the oil man, or any other non-electric range store, she gets a story which quite often takes the business away from us. The electrical dealer, I believe, in general knows the electric story fairly well, but unfortunately the electrical dealer is not the one to whom the consumer goes to purchase her range. She goes to the department store, the large hardware store, or the utility.

I personally have contacted at least a half dozen of the larger stores in Portland, and have found without exception that the salesman does not know anything about the electric range he is trying to sell. He knows nothing about the question of speed, he guesses at the cost.

If we could put on an intensive educational campaign, we might get somewhere.

G. A. Boring, District Manager
General Electric Supply Corp., Portland

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Personnel Wanted

Greatest problem facing the electric range business today, and the next one to be solved, is man power. If this business is to grow as it should in proportion to the service it will render, it must have the right men interested in it. We are greatly in need of more and better salesmen.

Something is missing in our present selling scheme. It is a set of conditions which make it possible for salesmen with average ability, intelligence and ambition to make an average living selling electric ranges.

The merchant who takes on a line of ranges to sell should not do so until he has fully made up his mind to really go into the business. This means maintenance of an adequate stock, willingness to advertise, ability to provide service, and willingness to invest a reasonable amount in salesmen during a training period.

More consideration must be given to finance plans by all those concerned with the promotion of the business.

Finally the manufacturer can supply the retail outlets with up-to-date, high-grade sales promotion materials. He should assume the leadership in sales training. And national advertising must be increased.

Although price, installation costs and rates may seem like the primary problems, they are not. Man power is the key that will open the domestic market that is ready for a vast expansion.

H. D. Conklin, Pacific Southwest Manager
Edison General Electric Appliance Co.

The Northwest Offers a Model In Cooperative Marketing

COMPARED to some districts, Portland is a range dealer's paradise. Of some 750 licensed dealers in electrical appliances and equipment, 58 handle one or more makes of electrical ranges and make a profit on the business. All well-known makes of ranges are represented in the stocks of these dealers.

One utility, Portland General Electric Co., merchandises ranges and sells more than any other single dealer. The other, Northwestern Electric Co., does not sell direct but maintains salesmen in the field, turning over the business developed, five prospects at a time, in rotation to those dealers who have salesmen in the field. Both companies advertise ranges extensively by radio and newspaper, and the Portland company conducts one or more range campaigns a year, with dealers participating. List prices are maintained, and, now that free wiring is no longer offered, the cost of wiring, approximately $27, is added to the price of the range. Either company will carry the account for wiring, if the dealer and customer prefer, at $1 a month without carrying charge. The dealers, however, finance their own range sales, either carrying this business themselves, or using the regular agencies for their paper.

Aggressive salesmen are not allowing the $27 wiring charge to act as a mental hazard to themselves or as an obstacle to the prospect.

Central Appraisal Bureau

One of the greatest stabilizing influences in the electric range business has been the Central Appraisal Bureau, which sets a fixed maximum value to be offered as trade-in allowances. This bureau, to which practically every large dealer in Portland carrying nationally advertised merchandise belongs (members now number 32), was established in January 1936. It started cautiously with a list of trade-in allowances which were revised May 1, 1936, and which are now being revised as of Mar. 15, 1937. These allowances run from $50 down to $2.50.

As to the stabilizing effect of the bureau, J. King Bryon, secretary, has this to say: "Our members find themselves out of the business of buying old ranges and are now selling new merchandise. Fear of the loss of a sale encouraged many of the former excessive allowances. Dealers, when making inventories at the end of 1935, found themselves confronted with a lot of over-valued merchandise. They had an investment in old ranges that could not be resold for 50 per cent of their cost; whereas now, every bit of second hand merchandise carried over as a 1936 inventory and accrued through intelligent appraising is saleable at a good margin of profit."

She wouldn't drive this car down Wilshire Boulevard on a bet...
yet her cooking method belongs to the days of the "one-lung" motor . . .
Cheer up, little lady, it's not as bad as it sounds. You've just never cooked on an electric range. You still think that your stove is modern because it looks modern. But before long you will learn that a modern fuel is the important thing! And when you start using a new electric range, cooking with clean, safe, fumeless and flameless electricity, you'll blush when you recall the days when your cooking methods were as ancient as the car shown in this advertisement.
Only an ELECTRIC RANGE is Completely MODERN

Southern California offers an excellent sample of cooperative advertising

This statement is born out by reports from members.

The bureau, as such, provides no "teeth" to enforce compliance. The "teeth" that keep the bureau functioning are supplied through the natural laws of competitive business.

All the dealers interviewed were emphatic in their praise of the bureau, which, in addition to the benefits brought out by Mr. Bryon, has done much to deflate the customer's opinion of the value of his second-hand equipment.

Utility Cooperation

In connection with Northwestern Electric Co.'s promotion of appliance sales without actual selling, the company maintains a dealer contact service. A monthly record is kept of dealer sales in different appliances and a card is furnished each dealer to encourage him to set a quota and check sales monthly. A similar card is used for the report to the company. These activities have been successful in inducing dealers to give more prominence and emphasis to the electrical appliance part of their business, which has resulted in painting and dressing up show rooms, better window and floor displays, expansion of stocks and more attention to prospects.

Portland General Electric Co. conducts one or more range campaigns a year, as for instance the one in progress at the time of going to press. This is taking the form of an essay contest on "Why It Is More Fun to Cook Electrically." Seven participating manufacturers have each offered a first prize of one range (one to be awarded each week). In each week's advertising done by the company this manufacturer's range is featured, and dealers handling the line are named. Contest entries must be handed personally to dealers.

Water Heaters

The water heater situation in Portland presents a somewhat different picture. In 1936, 1,862 water heaters were sold, the dealers securing 12.2 per cent of this business. Eighty per cent were sold by Portland General Electric and the balance by Northwestern Electric, this being the only item in the electrical line sold direct by that company.

The sales policy of both utility companies is to offer a high grade package job at approximate list and absorb the $13 wiring and $7 plumbing charges. Dealers claim their profit margin on this equipment will not stand the absorption of this $20 installation cost.

Portland General Electric considers the water heating business still in the pioneering stage and still lacking full customer acceptance. Further, it is concerned to see that every installation is made with an eye to the requirements of the family to be served. The company does not want any under-capacity jobs on its lines, nor does it favor the installation of galvanized tanks. For these reasons it has not felt that the time is yet ripe to establish a merchandising set-up that might be more favorable to the other dealers. Practically all of the best electric range dealers in the city would like to see the water heater placed on the same merchandising basis as the range; i. e., list plus installation cost, so as to add this appliance to their electrical line. They feel it offers opportunity for volume nearly equal to range volume.

Utility Sales Executives Seek New Aids for Dealers

TO MY untutored mind," says H. A. Lemmon, vice-president, Sierra Pacific Power Co., Reno, " the way to increase electric range-and water-heater business is for power companies to stop trying to peddle these devices and, instead, turn the job over to someone who can really do it: the electrical contractors and dealers and other selling agencies *whose business is merchandising*. It perhaps will be said that these people are not financially and intellectually strong enough to be entrusted with a function so important to the utility. If such is to be seriously contended, my query is "who made them what they are"? The answer is: the power companies who under the guise of cooperation have actually given in effect what has proven to be ruinous competition.

"The way to strengthen the electrical agencies is to strengthen them; make them prosperous and alert and "raring to go". This cannot be accomplished by a dictatorial-paternalistic atmosphere set up by the utility. Not at all.

"The outposts of the power industry —at least insofar as ranges and water heaters, etc.—are the dealers and other people offering these appliances to their customers—and to our customers. What then is their attitude toward the power company? I personally have visited and talked with many electrical dealers and contractors scattered over the Pacific Coast—some in large cities and many in the small towns. As I now recall it, every one of them disclosed that inside he was nursing dissatisfaction (to animosity) with the power company policy. The salesmen reflect the attitude of their establishments and in their conversations are not at all reluctant to broadcast their thoughts to the housewife regarding the general over-all character of the company furnishing the energy.

"The reverse of this picture would be a situation in which all dealers and all of their salesmen are ardent boosters for the power company—who go out of their way to correct misunderstandings and misconceptions in the consumers' mind about the utility. The public relations value of converting these contact people into a center of constructive propaganda ambassadors of good will is illuminating

"Any power company can increase its range and heater business, at less cost to itself, by going out of the peddling business and building up in its place a prosperous, united, aggressive and dependent electrical industry. Co-operation is gained not by lip but by doing things."

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Sell by Radio

Dealers are becoming more and more a factor in the sale of electric ranges and water heaters. These dealers in the main are small, and therefore can not carry on an advertising program that will show itself above the elaborate programs of the manufacturers of the most well known equipment.

Key men of the utilities take a broad view of selling, display keen appreciation of merchandising problems, offer sound, constructive suggestions to stimulate range and water heater movement

To get the most out of such outlets, we, the central station, must more and more forget our product advertising and create demand for the uses of electricity, particularly the hard-to-sell uses, which are highly competitive such as ranges and water heaters.

Another important factor in our load building program is the radio. As an advertising medium it is powerful, as a load builder it stands out with such equipment as the refrigerator.

Why couldn't the power companies on the Pacific Coast sponsor a coast network program featuring a Hollywood program of merit, paid for by the individual companies on a per meter basis? It should help us sell.

Lewis A. Lewis, Asst. General Manager
Washington Water Power Co.

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Observe Fundamentals

Loadbuilding through the sale of ranges and water heaters is a continuous year-around activity regardless of the type of competition offered and can only be successful if the following fundamentals are observed:

1. A thoroughly trained and well-compensated sales force.

2. To insure particularly electric ranges staying sold, in highly competitive territory, it is essential that all sales be followed up by thoroughly trained and experienced home economists.

3. The utility must adequately advertise the advantage and economies of ranges and water heaters and other major appliances leaving largely to cooperating dealers the product advertising. The margin profit of these appliances to dealers is insufficient to expect the dealers to sell the idea of electric cookery.

4. The utility must take the lead in organizing and conducting cooperative selling campaigns.

5. Free wiring, trade-in allowances, financing of dealer paper, and other trimmings may be used from time to time, depending on the territory served and the conditions to be met.

We hope that with the advent of the Kitchen Modernizing idea the manufacturers will be justified in advertising nationally.

A. C. McMicken, General Sales Manager
Portland General Electric Co.

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Make Buying Easy

Study of customers by income groups will reveal the fact that the highest electric range and water heater saturation is in the higher groups and the percentage of saturation drops- very rapidly in the lower income groups.

There are two answers to this prob-em. One is either a long term sales contract with monthly payments not in excess of $5, or a straight rental plan, which has been adopted by some companies with considerable success.

In my opinion we must first solve the problem of arranging our payments so that the customer can afford to buy before selling the customer on electric cookery and its many advantages. No matter how alluring the appeal may be in carefully planned advertising the customer cannot possibly avail himself of this service unless it is on a basis that fits in with his monthly income.

There is no doubt the automatic storage type electric water heater provides a satisfactory and permanent solution to the water heating problem if a rate of 8 mills or less on an "off peak" basis can be extended. The same problem of fitting the purchase of this equipment into the purchasing power of the customer must be solved.

In so far as the best method of placing both these appliances into the hands of consumers is concerned, I am convinced that a co-operative sales plan as between dealer and utility is highly desirable and can be instituted in such a way that both parties will benefit.

W. C. Mainwaring, General Sales Manager
British Columbia Electric Railway Co.

Utility Selling Essential

When a utility once realizes how essential domestic load is, the sale of electrical merchandise will then be just as much a part of them as is the generation of electricity. With that understanding we have trained a group of salesmen consisting of about fourteen men who thoroughly understand the art of selling electrical merchandise and who go out with the confidence that the utility stands squarely behind their merchandise in regard to price, service, and quality. This idea is so imbued in our own men that the result is that the citizens of this city feel equal confidence in anything the department handles.

In my opinion, the storage water-heating problem is still unsolved. This department is considering a 40-gal. tank with a 1000-watt flat rate heater of the immersion type at a flat monthly charge of $3, with 24-hour service, and a side-arm booster heater of 3 kw. connected to the meter at the ¾c rate to be used for emergencies.

P. C. Spowart, Sales Manager
Seattle Dept. of Lighting

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Time to Cash In

What are some of the major reasons why ranges and water heaters do not move more rapidly?

1. Both ranges and water heaters are definitely in the pioneering stage.
2. The common conception relative to the cost of electric cookery and water heating is that both are still in the luxury class.
3. The age-old problem of getting people away from the old rut is a real handicap. Their present method of doing things is good enough.

What are we going to do about it?

The cumulative effect of national and local advertising and sales promotion is making the public aware of electric cooking and water heating.

In my opinion, there is only one answer as to how to increase range and water heater sales and that is, a vastly greater army of trained sales people constantly and systematically educating the public relative to the merits of electric cooking and water heating.

Guy E. Davis, Domestic Sales Supervisor
Pacific Power & Light Co.

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Improve Our Salesmanship

With the establishment of many new home appliance stores well financed and under sound management, the electrical dealer was never in a better position to sell major electric appliances than today.

The electric range and water heater, and also major electric air heaters, have failed signally to find much more than a polite invitation to occupy one of the unusual spaces on the dealer's floor. There is danger of even these few wearing out their welcome due to, in my opinion, definite deterrents to volume sales.

The character of the merchandise sold in volume by the home appliance stores has determined to a large extent the type of salesman to be employed. Necessary fundamentals may be briefly stated as:

(a) A knowledge of the application of domestic rate schedules in order to arrive at the probable cost to the individual; (b) a knowledge of the comparative cost with other fuels; (c) an appreciation and knowledge of actual cooking and baking operations interpreted into benefits; (d) sufficient knowledge and familiarity with existing flat wiring plans, trade-in allowances and other customer inducements from which the retail dealer may benefit by reason of other agencies sharing in these costs.

We have two choices of action which might increase the range and water heater business:

First, we can institute in localities where the volume of business justifies it, a training school in applied salesmanship to the sale of this equipment for the home appliance salesman. The many years of experience and experiment in successful electric range and water heater sales might indicate that the utility could best do this job.

Second, if we expect to increase the sale of this equipment through electrical contractor-dealer outlets this business has to be made more attractive through larger profits.

A. L. Walker, Division Sales Manager
Pacific Gas and Electric Co.

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Among the new models which testify to the increasing importance of style in range marketing

Utility Salesmen Show Many Means To Bigger Sales

FUNDAMENTALLY selling is the art of getting others to think as you do. When the salesman knows all there is to know about his product and can present all its applications and uses in a satisfactory manner, customers soon realize it, and the result is increased sales." So writes Elmer Eastman, salesman for the Idaho Power Co., at Nampa, Idaho. He continues:

"By training of local employees for the study of the local electrical needs, we could, no doubt, render a fine service. Having determined the needs of a locality, sell merchandise to meet that particular need.

"A salesman needs more than just a knowledge of how to talk up his appliance. To be actually able to use an electric range is more convincing. An opportunity to learn more of the art of cooking and the use of hot water would be a boon to salesmen.

"Every employee needs a knowledge of the merchandise handled by the company he represents. Often the questions asked of service men and meter readers, if properly answered, are real helps for the salesman.

"Lastly, I suggest a greater use of show windows and display floors. People are more impressed by the things they see than by what we tell them. A cleverly arranged window or sales floor may awaken a need or desire that otherwise would not be known. Decorating, arranging and the application of correct color scheme is an important art in itself.

"People are becoming more enthused every year in electrical appliances. As we educate ourselves more concerning the needs of the people we serve, we will experience an increase in the range and water heater business."

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Educate Future Homemakers

This discussion will probably be influenced, more or less, by my fifteen years experience in rural territories exclusively.

The repair service of the utility will have much to do with continued use and pleasant customer relationship. The less expensive this service can be made to the user the faster and more permanent will be the spread in popularity of the electric method.

Wherever possible the cost of wiring the house and connecting the electric range should be included in the purchase price, with allowances made if this work has already been done. Trade-in allowance for old equipment is a good sales stimulus for backward seasons, but should only be staged periodically.

The sale of electric cooking to future generations will be greatly influenced by the use of this equipment in the domestic science departments of public and private schools. Attractive purchase prices to these schools with frequent replacement offers to keep the models up-to-date will do much to promote the sale to the parents of the girls, as well as setting it as the ideal in a girl's mind when she becomes a homemaker.

Cooperation of kindred concerns such as furniture stores, dealer contractors, wiring contractors, department stores, is vital.

Some rural customers are confronted with problems which neither company policy nor eye-appeal can overcome. One is the need for heat in the kitchen. The solution to this is a combination electric and coal range. This problem has been avoided by manufacturers on various grounds but the sooner one of them develops a practical, moderate-priced standardized combination model, the sooner will electric cooking make strides in rural territories.

An intensive educational program for architects, builders and their related trades would make electric cooking and water heating an integral part of the building plan and specifications.

The manufacturer could help by reducing the number of models of ranges. Needs of particular sections of the nation, could receive some study by the manufacturer.

The entire industry could improve its business and the utility better its public relations, in my opinion, if the mystery could be removed from meters. I can see possibilities for a meter as easily read as the mileage total of a speedometer. This idea may not be feasible to a meter man but you cannot question its advantages in public relationship.

The salesman's part in the program to increase appliance sales is summed up in the one word WORK. The poorest looking house often covers the finest equipment enjoyed by a happy appreciative family who have discovered that "Electricity is the Biggest Bargain in the Home".

H. Guy Child, Salesman
Utah Power & Light Co.

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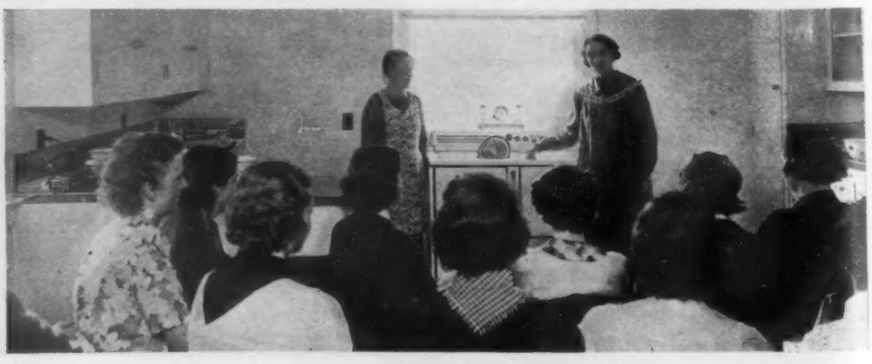
Advertise the New Low Costs

I believe that if all utilities would place more emphasis on operating costs of electric ranges and water heaters, a greater volume of merchandise and kw.-hr. sales would necessarily follow. Too many of the general public today have a 1929 and 1930 impression of electric servants and monthly operating bills. The manufacturers are more than doing their part in telling their story of greater values, increased efficiency, modernity, etc.

Therefore, I believe that all ads by the utilities should carry something about monthly bills to help the salesmen help the utility and electrical industry in general.

Marshall W. Lee, Salesman
Puget Sound Power & Light Co.

A sample of what Mr. Childs suggests is the home economics department of Whittier College, Calif. Students under Prof. Maude E. Evans have two all-electric kitchens for their work. Guests at this session of the class are (left to right) Mrs. Jeanette Germaine and Mrs. Theia Kamerer, home economists of Southern California Edison Co., Ltd.



Better Informed Salesmen

I am listing below three points which I believe vitally affect electric water heater sales:

First: an electric rate favorable to electric water heating in the average home.

Second: an electric water heater built for efficient, long-life service. This, I believe, has been accomplished.

Third: the method used by the individual salesman in his presentation. I believe this is the most important.

There are so many angles to selling electric water heaters, that in my opinion a salesman should take a specialized course in water heater selling. He must know all about heating water, the advantages of hot water, and what hot water means to the whole family. To be able to present these advantages of electric water heating, he must know all the methods of heating water and be able to prove that water, which is heated in house heating equipment, is the most expensive of all. He must know the proper way to install an efficient electric water heating system; therefore, he must know something about plumbing—at least more than the prospect knows.

Hot water, in my opinion, is just like any other commodity; it isn't the cost of the installation, it's what hot water is worth. For economy's sake my slogan is—not how much hot water can your family use—but, "How much they need!"

H. E. Reed, Salesman
Idaho Power Co., Boise

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Consider the Home

The territory I sell in may be somewhat different from that of other salesmen, inasmuch as it is purely agricultural and rural. Very few farm homes have modern heating plants or running water, so the water must be carried in and the homes heated by stoves; because of this it becomes difficult at times to interest the farmer in installing a water heater or an electric range. In spite of these facts in some of our districts we have a range saturation of 75 per cent. However, we are just breaking into the water heating industry and I believe in a few years it will be as popular as the electric range.

There are several things that the industry could do to further the sales of these appliances. I have enumerated three I believe very important: First: I believe if the industry put before the customer more the idea of remodeling their homes, installing modern water systems and heating plants, while this may not help directly, and may not be in the line of direct selling of these two articles, yet in my opinion the customer would be more willing to put these appliances in and be more satisfied with them after they were installed. Second: As far as my territory is concerned I would like to see the industry build a moderately priced combination range, because of the type of heating systems our customers have. In many instances in order to install an electric range it becomes necessary to put the range on the back porch or install a smaller one because of the lack of room in the kitchen for the coal and electric ranges. Of course, this item comes under the engineering field, but it would help create sales if it could be done. Third: May the industry continue to produce better advertising, for the best way to build sales is to tell the story over and over. In this selling game one never can tell when the seed is sown, but we have to keep sowing, hoping, like the farmer, that we may reap.

William Grant Ovard, Salesman
Idaho Power Co., Idaho Falls

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Get Everybody Working

Probably the most important thing for the industry at large to do is see that all people engaged in the electrical industry set the example. So many times we find people earning a living through this medium using other means for cooking and water heating. Even men high in the utility field have been found using other methods for this service. Competition is quick to use this in a negative manner with a prospect and ofttimes the sale is lost because of it. It is recommended that the management of every utility, distributor or dealer put on a drive for employees to use electric ranges and water heaters. These employees in turn become strong sales agents, because their friends, neighbors and relatives value their opinion way beyond the words of a salesman employed to go out and get the order.

If the industry nationally were promoting the use of electric cooking and water heating there would be a more general acceptance. It is interesting to note that people who come from other parts of the country, where no effort has been put forth to promote this idea, particularly the East, are rather hard to convince that electric cooking is better than other methods and the same thing holds true with water heating. It is still a fact that people think electric cooking is slow and so few people know that the modern electric range is faster than any other. Even our own servicemen here were of the opinion that such was not the case.

We have so many advantages with an electric range that we neglect to point them out. They are so obvious to us that we take them for granted, while our prospect may never have heard of them. The following ten are outstanding: modern, fast, economical, clean, simple, certain, cool, healthful, safe, time releasing.

Electric water heating, too, is unsurpassed for a care-free service. When each salesman is pledged to talk water heaters, their cleanliness, economy, coolness, etc., with every new prospect for other electrical equipment, it is surprising how many good prospects for water heaters can be created.

Every dealer in the industry can do his bit toward popularizing the use of all electrical appliances. Even the companies which do not sell ranges and water heaters would increase their sales if a higher percentage of the homes had all-electric kitchens. I would recommend that the entire industry be liberal in advertising these facts.

D. L. Freebairn, Residence Salesman
Utah Power & Light Co.

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Gain Employee Cooperation

In my estimation the way for electric range and water heater sales to be built up is through the cooperation of the entire personnel of the organization, regardless of employee's position in the organization.

All employees should have a general idea of the entire sales program and pass it on to the customers at any opportunity. By so doing the customer is in a receptive frame of mind when contacted by salesmen, this along with perfect inter-department cooperation will greatly help any dealer's sales program.

Roy I. Johnson, Salesman
Puget Sound Power & Light Co., Port Townsend

Electrify the domestic science departments of the schools; build combination ranges for rural customers; educate the public up to date; employ well-informed salesmen; make thorough electrification integral with home building and repairing—These are a few of the ideas of utility salesmen who turn a critical eye on the industry and themselves

EDITORIAL

Sit-Down

EVEN school children at recess time excitedly propose sit-down strikes. Department store clerks leave customers standing while whispered cloak room discussions ensue on whether or not to join the union. Light and power employee groups likewise are hustled into mass meetings, primed with promises and pumped full of class inferiority self-pity, so that they may lose their sense of judgment along with their heads and hearts in what has become a mass hysteria. Whatever admiration there has been for the leadership qualities John L. Lewis pales before the implied menace of the mob psychology which he is erecting into a destructive and selfish machine.

Meanwhile few employers or managements have done anything except worry. At least, whatever efforts they have put forth have been in conference rather than out in the forefront of business leadership. Perhaps the one great weakness of individualism, among its host of strengths and accomplishments, is that when group action is sorely needed the individual business man finds himself pitiably alone. Each business executive hesitates to step forward alone in an endeavor to lead the public back to sanity and understanding. Yet the time and the approaching crisis call as never before for a business leadership to start the organization of a counter crusade of common sense and civic responsibility.

Two avenues lie ahead. One—the drastic, and let it be hoped only the "last stand"—is that business and capital itself call a sit-down strike. Without business there are no jobs and no wages. A taxpayers strike is in the same desperate category—justified only on the ground that since the purpose of taxes is to maintain a government whose first duty is the protection of persons and property, and that on failure to provide either, such government ceases to exist and to merit support. It is to be hoped that neither of these last resorts shall become necessary.

The other avenue is constructive. Likewise it is simple and natural and certainly not as expensive as the destruction which a strike of capital would precipitate. Briefly stated it is this:

Let business call employees together, as Mr. Lewis' henchmen have already done. Such meeting can be in groups, and if you please, on company time. In such meetings let management simply and clearly lay its cards face up on the table. Let it assure employees it has no objection to their hiring someone to do the bargaining for them if they prefer to deal through an agent, who sooner or later will have to take his fee, rather than to deal as they always have been able to do, face to face, man to man, with their executives. Then let the facts and figures as to company costs—not only on labor but materials, services, overhead, selling, advertising—be explained. Let the necessity of these related costs to volume and *sales*, (out of which only can come wages and expenses), be frankly presented. Let it be pointed out that overbalanced wage increases inevitably must be reflected in price increases, which in turn probably will decrease buying and thus curtail jobs. Employees may be reminded that the ultimate price of turning their destinies over to alien agents may well be regimentation, enforced by broken heads. These are realities—not to be shouted or threatened, but calmly to be faced.

If the employers do not present this side of the case, there are few of their employees who will think deeply enough to recognize these truths. And thousands of employees who have made their way on their own merits and prefer to continue to be masters of their own future growth and development, will take moral courage to resist what they may individually feel now is a hopeless cause if they must face the growing hysteria alone.

The real "forgotten man," the sober, striving, responsible, conscientious worker, the one whose hard earned savings are now being borrowed on government I.O.U. to finance relief and expenditure, the one who pays taxes to pay himself back what has been borrowed from him, the man and woman who is ambitious to improve his position, responsibility, and standard of living—this real forgotten man needs help. He needs it as much as does business. Against the wave of degeneration to a spineless "the-world-owes-me-a-living" attitude toward life, it is critically necessary that the forgotten men get together, understand each other better, and to counteract the sweeping sit-down, the destructive sit-down, the sit-down of the United States government and of most of its state and municipal authorities.

Three Elections

REASSURANCE for the future of an industry whose principles and precepts deserve better understanding from the public, fairer play from the press and more intelligent consideration from legislators, is seen in the outcome of three municipal ownership elections in California during recent weeks. In Fresno, Tulare and San Francisco bond

issues aimed at displacing private utility operation of distribution systems with municipal operation were defeated. What a boon it would be to the industry if it were possible to analyze the three elections and set down in simple terms a tested formula for off setting similar political attacks in other communities! However, no such procedure is possible. Conditions and methods in each locality were different. It is only possible to interpret each election in the light of the proposition before the voters and the technique employed to present the facts.

In Fresno the power company reaped the reward of years of fair dealing and good service, backed up by a personnel which had always been a vital part of the community and its activities. The presentation of the company's case was doubly difficult because of an unfriendly monopoly of both newspaper and radio. Under a barrage of muck-raking journalism, the company relied on the loyalty and fighting spirit of its organization to carry the story direct to the public. There was no doubt in the minds of any one that the company was fighting openly for its rights and its existence in the community. And the bonds lost two-to-one.

Little things sometimes have a powerful effect on public opinion. This was demonstrated in Tulare, where only a simple majority was required to pass revenue bonds and where the proposition had been before the public for six years. A new fire siren which would not work, played an important role in marshalling public opinion against municipal operation of the power system.

San Francisco's voters, impressed by the need for money to be spent on rapid transit, awed by the number of measures on the ballot, and skeptical of the $50,000,000 proposition and the promises of its proponents, saw no reason for changing the label on the distribution system and the name of the proprietor on the light bill. Threats of drastic action by Secretary Ickes for alleged violation of the Raker Act failed to counteract the certain knowledge that $2,000,000 annually (24 cents on the tax rate) had been taken into the city's coffers since 1923 through its agency agreement for distributing Hetch Hetchy power. No court had declared that agreement invalid.

Unquestionably in each of the three elections the fact that the pressure and confusion, the distraction and worry of the depression had lifted and with it, the reliance on political promises. Besides, bond issues of any character seemingly have lost favor with a public which is rapidly becoming tax conscious as costs of all branches of government continue to increase.

If these three elections indicate a trend, then it is reasonable to believe that public opinion is recognizing the experience and ability of the private utilities to serve the people reasonably and well.

Sales Tools for Wiring

If it were not for the relentlessly persistent way in which the very inadequacy of wiring kept insinuating itself into any and every effort to sell more of the equipment which, like it or not, must be served by wire in order to operate, the industry long ago would have given it up as a bad job. Certainly the problem has stirred up more controversy, generated more heat, excited more schemes attempting to solve or circumvent it than any other industry difficulty. Yet today, oddly enough, it seems nearer to some sensible and concrete action than ever before.

Two bright hopes have risen from the bogs of former controversy. First is the combined industry effort to arrive at a recommendable standard of adequacy. Just off the press is the new Handbook of Interior Wiring Design, the work of an all-industry committee extending over the past several years. Approved and participated in by all groups in the industry it deserves to be utilized wherever wiring design is involved. It is complete and ample enough for use in every one of thousands of local promotions and drives on both the old and new wiring markets.

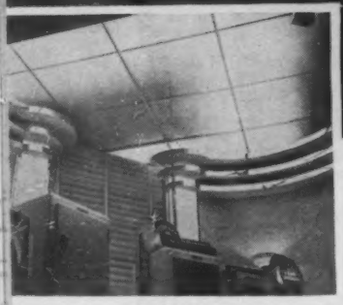
The other bright hope arises from a suggestion contained in the April number of *Electrical Contracting* magazine—that some "gadget" like the sight-meter be devised to prove visually to the public that poor wiring costs too much to tolerate. A "megger" might be adapted to the purpose, just as the photo-electric cell and galvanometer were combined in the sight-meter.

One suggestion, born out of experience with other movements, is offered by Electrical West to the industry. The suggestion derives from analysis of the success or failure of many a cherished dream of industry activity. Briefly stated this lesson out of human experience hints with more than a gentle nudge that the effort to do something about wiring with these new tools not be too highly organized on a colossal national scale. All of the gigantic industry movements which have sought to think out and "economically plan" every detail of procedure have mired down in the cussedness of human nature at the receiving end. There is something about the "foreign" importation of even an idea which bristles up resistance, even if it be a good idea or program.

If, on the other hand, this wiring problem is encouraged to start locally in a thousand communities more or less spontaneously, it shall not be long before the highly individual local groups will be anxious to exchange experience and knowledge with each other, and out of the soil will grow a movement which in the end will encompass the entire continent. Such a movement, rooted to the realities and the necessities of each locality, may lack uniformity, but it will achieve results—more wiring for more people, and probably at less cost. That, in the long run, is exactly what is wanted above all other considerations.

beautiful large park in its center, and to make it useful to those who work in daytime, 16 Westinghouse Mushroom units like those at Chicago Fair were installed to throw light at waist level over flower beds and walks. Two-conductor lead cable, buried 6 in. underground, serves the units

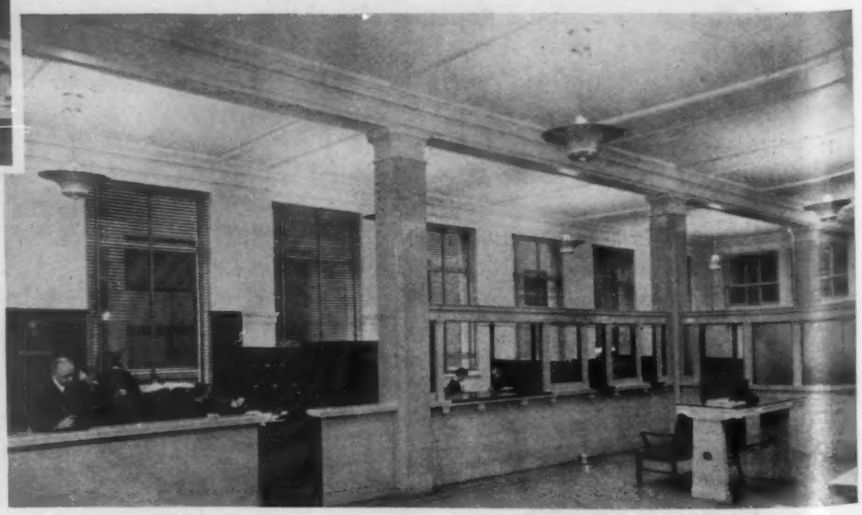
COOPERATIVE venture in school lighting (below) at Pomona, Calif., under direction of Dr. P. L. Spencer, education department; Frank McMahon, principal, and Edison Co. Six 500-watt indirect units, three on manual control, the inner three on photo-electric control, mounted on front wall. Note how desks are set at an angle to face inner walls away from windows. Test results indicate easier school work and increased happiness and cooperative spirit among pupils



SKYLIGHT panel lights the windows of Granville street office of B. C. Electric Ry. Co., Vancouver, luminous pillars decorate the background. Above the flashed opal ceiling are 102 lamps of 200-watts each, in all windows combined. In each column are 50 60-watt lamps arranged on control to provide different effects. For instance, filling the pillars with crumpled colored cellophane of various hues, a luminous marbelized effect is produced. The center panel is removable for change of background effect. Extending from the pillars at the ceiling are three troughs each containing lamps in colors to add to the decorative effect. Not shown are two smaller windows under an illuminated dome flanking each side of the entrance door. Colors used are blue floor, horizontal bands of yellow

FIRST mercury-vapor and incandescent combination office fixture installation in the San Joaquin valley was made at Security Title Insurance & Guarantee Co., Fresno, by Lewis Electric Co., engineered by Jack Hammond, San Joaquin Power. Eleven units, with 400-watt mercury lamp, 250-watt Mazda lamp, and transformer in the canopy, produce 30 foot-candles at desk level. Job involved repainting and decorating, and a "fight with the painter to get a matt surface on the ceiling", according to Hammond. Interest in this installation bids fair to develop several more jobs

SAMPLE room for commercial lighting is what Clyde L. Chamblin (right) and his sons Garth (left) and Keith have built at the rear of their California Electric Construction Co., San Francisco, store. Typical office conditions prevail, as to height, wall finish, ceiling, etc. Three elexit outlets in the ceiling permit ready demonstration of any of a variety of fixture types and intensities. Customers can see for themselves what the units will do in appearance and light distribution on the sightmeter kept handy

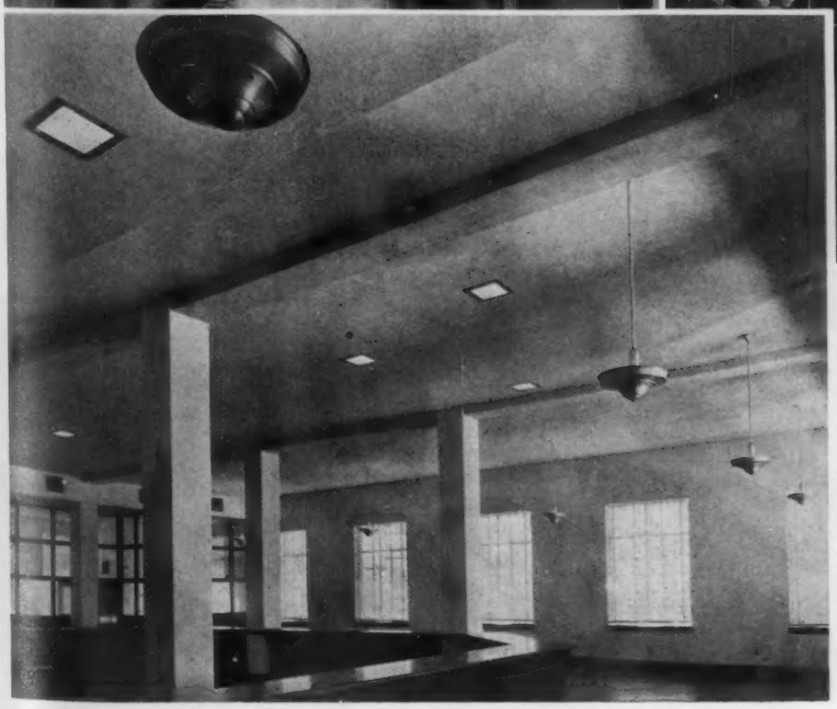


LIGHT

DR. LUCKIESH addressed overflow audiences everywhere on his brief western trip. Here is his crowd at Edison Co. auditorium, Los Angeles, where he (center) was introduced by Dr. Arthur W. Nye, head of physics dept., U. S. C. (left) and Frank Hansen, Western Institute of Light and Vision (right)

HALL OF RECORDS, Fresno (below) uses built-in lighting in hall and corridors, and an ingenious supplementary direct lighting arrangement from built-in control lens units to punch plenty of light down on the counters in the public offices. Indirect units provide general illumination. Carl Wolf was engineer, and Wessel Electric made the installation. The building also contains numerous advanced details of electric control and lighting, elaborate fire and burglar protection systems, air conditioning and decorative lighting around the exterior

SPECULAR REFLECTION is avoided where prolonged seeing tasks are involved, but in selling shiny new automobiles a component of it is a selling tool. J. E. French, Dodge dealers, San Francisco, find it so in a new show room (below) designed by Miller & Pfleuger, installed by Herzog Electric Co. Rival dealers now want the same thing



ABSENCE of hanging fixtures keeps all attention on the autos (above) as four lines of in-built Holophane units, with four 300-watt lamps per unit, place an intensity of 25 foot-candles on the floor

LUMINOUS sign which a modern architect of Whittier, Calif., has at his door in the Emporium Building (right). A light box, with flashed opal glass face, on which are glued opaque block letters, is simple, but striking. The glass is removable for relamping. Much superior to the old fashioned "shingle", because it gets instant attention, denotes modernity

A Western Super Shop

THOSE who are in a position to know say that the new plant of the Quality Electric Co., Ltd., at 1235 E. Olympic Boulevard, Los Angeles, is the most up-to-date electrical repair and construction establishment in the West.

Located for fourteen years at 812 S. San Pedro St., the concern outgrew its facilities. At the new location, the firm has 23,000 sq.-ft. of floor space and an adjoining parking lot of equal size.

The display room, with a frontage of 70 ft. on the boulevard, and a depth of 40 ft. permits the showing of motors, control, switchboards, etc., with facilities for four large window displays. Offices are at the rear, with salesmen's offices, drafting room, ladies and men's lounges on the mezzanine floor.

The shop is arranged for line production with ample crane and monorail facilities. An inverted ramp, entering from the rear of the parking lot, permits loading at the floor level. Stripping and Oakite cleaning are done at the rear. Coil winding, taping and bench operations are at the front of the shop. Adjoining are the varnish dipping tanks and electric baking ovens. Directly behind these is the assembly floor and test department which brings work back to the loading dock.

A completely equipped machine shop, with facilities for precision work, arc and gas welding, dynamic balancing, etc. is a part of the new plant. One important branch of the company's activities is transformer repair. Facilities are available for doing this work on a factory basis.

Too often lacking in electrical repair shops are suitable testing facilities. At Quality Electric every repair job is given AIEE tests. Voltages from zero to 60,000, 50 or 60 cycles, are available, through a 100-per-cent induction voltage regulator, with ample capacity for heavy testing. Direct current is also available.

A fine commercial instrument laboratory handles repair of all makes of mechanical or electrical instruments. The firm is the authorized service representative for the Weston Electrical Instrument Corp. and the Sangamo Electric Co., and is distributor for Esterline-Angus and J. G. Biddle Co. equipment, and for Rockwood paper pulleys, V-belt drives, etc.

The staff includes graduate engineers with factory training and experience in design, construction and repairs. The organization of 60 people, is headed by J. O. Case. With him are A. W. Wotkyns; C. C. Adams, shop superintendent and designing engineer; Ross Bartlett, Louis Mackey and Earl Pehl, sales engineers.

At left (top to bottom) the instrument laboratory, the display room and the test board and ovens; at right (top to bottom) the completely equipped repair shop, the machine shop and the transformer room

News of the Industry

ROCKY MOUNTAIN GROUPS FORM NEW LEAGUE

The Rocky Mountain Electrical Assn. and Electrical League of Colorado have merged to become the Rocky Mountain Electrical League.

Consolidation of the two bodies occurred March 8, and was celebrated April 1, at the annual meetings of both groups. Guy W. Faller, president of the Rocky Mountain Electrical Assn., was unanimously chosen to head the new body. Gaylord B. Buck relinquished presidency of the Electrical League of Colorado, to become chairman of the R.M.E.L. Sales and Promotional Section—one of the five major divisions under which the new league will function.

Committees of the merged bodies, headed by J. E. Loiseau, Public Service Co. of Colorado, and E. E. Brazier, G. E. Supply Corp., Denver, have been working out details of a greatly-expanded sales promotion campaign, affecting the industry in the intermountain territory. This campaign, covering engineering, accounting and operating phases, is embraced in a 14-point program.

Officers are: A. H. Heitzler, Public Service Co. of Colorado, O. B. Summers, New Mexico Power Co., J. H. Jacobucci, Utah Light & Power Co., and Brazier, vice presidents. George E. Lewis, who managed the R.M.E.A. and for the past year was also acting-manager of the Electrical League of Colorado, secretary-manager; John A. Baker, for several years identified with league work, field representative, and W. C. Sterne, Arvada (Colo.) Electric Co., secretary.

Broadening the league's scope, plans were laid for a greatly increased membership and a super-energized program. Architects, builders and others are written prominently into the picture. One of the league's major divisions provides for membership by department, hardware, furniture, music and radio dealers. Provision is made for installing dozens of local chapters through Colorado, Wyoming, New Mexico, Utah, South Dakota and Nebraska. Headquarters remain in the Gas & Electric Building, Denver.

SLIDE KILLS SEVEN ON FLATHEAD PROJECT

Rock, loosened by recurrent thaws, crashed to the bed of the Flathead River, March 3, killing seven men working on the Rocky Mountain Power Co. dam, and injuring three more. Six of the dead were Indians, who have job preference on the project.

The accident, first major one in the long history of the project, occurred in early morning, while the men were cleaning up an excavation for the river barrier. More than 1,200 cu.yd. of dirt and rock was estimated to have given way, midway up the canyon wall, falling 80 ft. A second slide nearby caused the three injuries. A third slide did no damage.

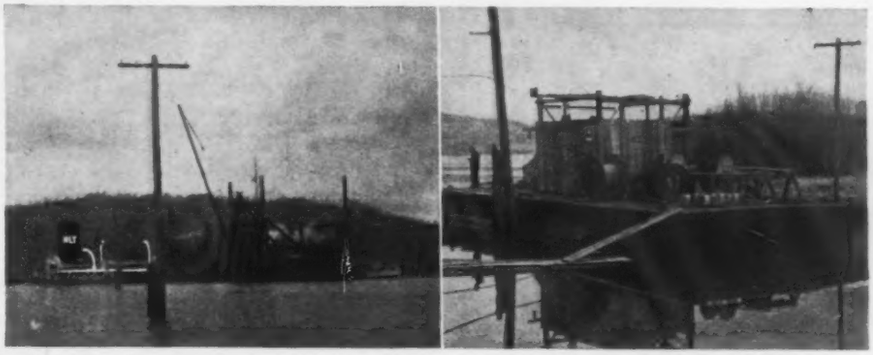
HUNT THIEVES WHO STOLE HOT LINE

In a night raid on energized lines of the Pacific Gas and Electric Co., near College City and Colusa, Calif., March 9, thieves succeeded in cutting down three miles of conductor and making a get-away with the copper. Service in the vicinity was interrupted.

Apparently trucks and reels were used to handle the stolen equipment. Cutting cable from the 11,000-volt line could have been accomplished only by experts, according to company officials.

GRAND COULEE project is heading toward another peak of employment. Last month, 1,000 men were added to the payroll and the Mason-Walsh-Atkinson-Kier Co. sent out calls for 300 laborers. During concrete pouring this summer, the payroll is expected to reach 4,000. To date about $12,000,000 has been spent for wages on the project, $17,000,000 for materials and equipment.

Power Reaches Out to Salvage Motorship



At the extreme left, the stack and superstructure of the Italian motorship, Feltre, are emerging from the Columbia River, where the outbound ship sank last month. Northwestern Electric Co. reached her near mid-stream with the 11-kv. line, lashed to piling. At right is the 11/2.4-kv. floating substation which served two 200-hp. motor driven pumps. Twenty thousand kw.-hr. raised the ship. Line construction and removal cost $3,500

CHECK-UP REVEALS SNOW SHORTAGE

A decided shortage of snow in the northerly watersheds of the Sacramento. McCloud and Pitt Rivers in California, was reported in the cooperative snow survey of the State Department of Public Works last month, after warmer weather had permitted a close inspection of the pack.

Comparing conditions to those of the same time last year, the pack in this area is but 60 per cent. Southward, the pack grows heavier. From the Feather to the Stanislaus the pack ranges from 75 to 90 per cent of last year's, while further southward it is above a year ago, ranging from 5 per cent in the Tuolumne to 20 per cent in the Kern.

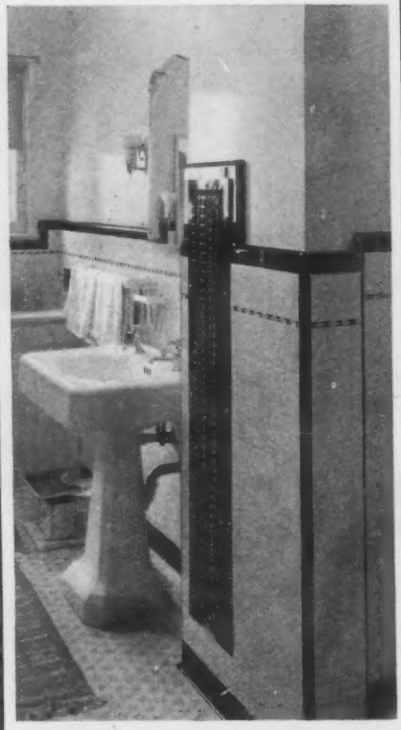
Precipitation to March 1, was similarly distributed. Figures, in per cent of normal for that date, are: Feather River Basin, 70; Mokelumne, normal; Kern, 165; south of the Tehachapi range, 160 to 180.

The Los Angeles Board of Water and Power Commissioners, following a survey in the southern Sierra Region, predicted this year's run-off there would be slightly above normal.

UTAH'S WATER OUTLOOK was reported the best in five years by T. H. Humphreys, state engineer. "Storage of water in the state's reservoirs reached its peak in 1922, started down in 1923," he said. "It started going up in 1936, and we beileve that an upward cycle has set in."

Thermador

HEAD-TO-HEELS HEATER



Head and Shoulders Above Competition

There is only one HEAD-TO-HEELS electric heater and that is a THERMADOR.

Electrical dealers throughout the West find this exclusive unit an opening wedge for additional sales. The public is quick to recognize its comfort and smartness. And it's easy to convince a prospect that a bathroom is the one room in the house that calls for an electric heater.

We'll be glad to give you full information regarding prices and ease of installation. Just write:

THERMADOR

Electrical Manufacturing Co.

Factory—2821 East Pico Blvd., Los Angeles
557 Market Street, San Francisco
Builders Exchange, Fresno

Business Section Meeting Draws 320 to Salt Lake

If the keynote at the twelfth annual conference of the Business Development Section, Northwest Electric Light & Power Assn., Salt Lake City, March 25 to 27, could be reduced to a three-word slogan, it would be "Sell the Use." This theme was accented in the speeches of George M. Gadsby, president, Utah Power & Light Co., and association president, and Davis M. DeBard, Stone & Webster Service Corp., New York, and mentioned by inference in the other speeches and the committee reports.

The 320 registered delegates participated in a strong opening program followed by two sessions of committee conferences, of which there were six, broken down between residential, commercial and industrial, rural and advertising. Committees reported at two general sessions which followed.

Decade Reviewed

George H. Wisting, Northwestern Electric Co., section chairman, opened the meeting with a comparison between conditions of ten years ago, when the association last met in Salt Lake City, and today. He introduced George M. Gadsby, who emphasized that service and not energy is the important thing we have to sell. Pointing out that the goods offered by the private electrical industry are superior to those offered by municipal or government systems, he urged that the industry continue to stress the idea that service is paramount.

W. C. Mainwaring, B. C. Electric Railway Co., vice-president of the association, took account of market possibilities in all lines. Increased earning power of the public, he said, promises large increases in utility business.

Under the subject, "Do Not Anchor Here," Davis M. DeBard warned that although an excellent job had been done it was no time for complacency. He said:

"In selling the convenience, comfort and benefits of our service, we enhance the need for ourselves as the servant. If at the same time we develop through proper advertising and publicity, a thorough public understanding of our aims, we will have gone far to assure the continuation of our existence as a private industry."

Public Relations

High consumer acceptance with resultant low rates constitutes the challenge of western utility commercial men to federal projects, according to George C. Tenney, editor of ELECTRICAL WEST. Accept the meritorious, community-building features of these projects, such as flood control and irrigation, he suggested, and then face the power problem as a local situation which can be met with the same high order of salesmanship that has been displayed in building load and favorable opinion.

A discussion of the responsibility of company commercial departments for improving public relations, by E. H. Adams, B. C. Electric Railway Co., delivered in his absence by Mr. Mainwaring, concluded the first session. The means to good relations, he said, is an attitude by everyone from top to bottom of the organization aiming toward satisfied employees, satisfied customers, and satisfied dealers.

Under the program of the Residential Sales Bureau, C. P. Keenan, Detroit Edison Co., told how 9,700 ranges were put on the lines of his company in 1936 with the aid of other dealers. In the same session K. M. Robinson, Idaho Power Co., chairman of the E.E.I. Water Heating Committee, outlined the benefits to the utility of water heating as an off-peak load. He predicted that in five years we would be selling more water heaters than ranges, and laid particular stress on the necessity of encouraging employees to install and use this service.

United Front

The meeting was brought to a stirring close by Dr. Adam S. Bennion, Utah Power & Light Co., with the subject, "A United Front on Sales." He assigned to the utility the job of selling service and use while encouraging the dealer to merchandise. He outlined the chief utility functions as pioneering, planning and training; he characterized the manufacturer as the research and developnig unit, the jobber and distributor as vital agencies in planning campaigns. All, he said, must present a co-ordinated front.

A summary of the committee reports follows.

Residential Sales Bureau

W. A. Huckins, Utah Power & Light Co., Chairman

Home Modernization, George W. Madison, Portland General Electric Co., Chairman—The trend is toward a greater percentage of sales by dealers other than utility companies, with small appliances distributed almost entirely by the other dealers. Kitchen planning has aided in some territories in increasing the percentage of complete home electrification.

Home Service, Nancy Finch, Utah Power & Light Co., Chairman—Some companies have combined home lighting promotion with home service departments which heretofore were used entirely for the promotion of ranges and appliances. The practice is not uniform, but the tendency is toward combining to get a lower cost operation.

Walter E. Potter, Incandescent Lamp Department, G. E. Co., vice-chairman for Home Lighting, urged the necessity of the utility

continuing an active home lighting campaign through dominant advertising, an active leadership in lamp bulb sales, promotion of the sale of I.E.S. lamps by direct sales and dealer campaigns, the maintenance of a home lighting department with women doing the demonstrating and selling, all combined under adequate supervision and executive control.

Advertising Committee

J. Lightbody, B. C. Electric Railway Co., Chairman

The methods and technique of advertising are in a continuous state of flux so no conclusions can be reached. It was recommended that low-use customers be given particular attention in campaigns emphasizing that electricity is cheap.

Commercial and Industrial Sales Bureau

A. K. Gaylord, Portland General Electric Co., Chairman

Industrial Power & Heating, G. L. Ellerbeck, Utah Power & Light Co., Chairman—The greatest possibility for the profitable promotion of electric service in industry is among small customers now using only a limited service. Expanding such service involves an intelligent follow-up by the industrial representative of the company who should analyze the customers' problems with a view to revealing further applications.

Commercial Cooking, C. T. Bakeman, Puget Sound Power & Light Co., Chairman—In the Northwest states, 16 salesmen added 8,000 kw. in 1936 (two large companies not included). This is equivalent in revenue to 8,000 domestic ranges. We now have complete electric equipment to meet every restaurant need. The best sales help is the testimony of the user. The committee is preparing data on actual installations, giving load, operating characteristics and production.

Air Conditioning, J. E. Yates, Pacific Power & Light Co., Chairman—Ventilation of the kitchen is the most important air-conditioning service we can render, and the forced-air type has proven successful. In the dining room of the restaurant the problem is air purification. Since odors are vapors and cannot be filtered, the solution is to dilute them, which is the chief reason for pumping in outside air.

Some new special applications of air conditioning have been for battery brooding, mushroom growing and turkey hatching.

Commercial and Industrial Lighting, G. B. Bocarde, Pacific Power & Light Co., Chairman—The revenue in this field added by the larger companies in the Northwest in 1937 is the equivalent of 31,500 water heaters, and costs 10c to 50c per dollar of E.A.R. to get. If street lighting in the Northwest were brought up to I.E.S. safety standards, the number of units would be increased 2½ times; the kw.-hr. used, 4 times; effective illumination, 10 times; while street lighting costs would increase only 2 times. This would greatly reduce accident costs.

Rural Sales Bureau

S. J. Bowman, B. C. Electric Railway Co., Chairman

There are 100,000 farms receiving central station service in the Northwest with an annual average consumption of 1,615 kw.-hr. Most companies have set a "bogey" for increasing this in 1937 by 100 kw.-hr. per farm. The companies now have one man promoting farm load for every 1,650 farm customers. Six companies have definite plans to survey their farm load and to record their physical capacity for serving this load.

The Standard News

April 1937 — Electrical Edition

Published by THE STANDARD ELECTRIC STOVE CO., Toledo, Ohio

Not for a Day

There is a certain amount of pride connected with building an article which gives long and uninterrupted service. We here at Standard are all relatively young men. The oldest of us are the connecting links with the original founders. Some of the original Standard employees, those that were here on the day Standard opened for business, are still with us, each proud of his connection with the Oldest Name in Electric Cookery.

Standards of the past and Standards of the present were built "not for a day," not for a year, but for just as long as you want to use them.

Standards have that sturdy "feel" that denotes quality and stability. One of our chief sources of pride is the fact that we have so many "firsts" in the electric range business. For instance, the first timer on an electric range was used on Standard, in fact, we did not consider an electric range complete in 1914 unless it had a timer clock. This clock controlled —listen, you won't believe this—this clock controlled the cooker, the oven, one hotplate and the light over the cooking top. That last sentence brings up a lot more "firsts." The first and only cooker on any range until 1920, when our patent expired. The first time a surface burner had been controlled by a clock, the first pilot light on a range and it was controlled by a clock. Another "first" is the recessed oven burners, and the oven runners pressed into the oven sides, eliminating flapping runners. Just being discovered now by others as a really good feature.

The first all white porcelain enamel range was a Standard. The first to use acid proof cooking top. Note we say "acid proof," not acid resisting.

Standards are not built for a day. They are built for years of service. After all, trouble-free service is the only thing your customer remembers throughout the years. The range is a utility article, built to perform a yeoman's job of cooking for the whole family, year in and year out. How will it look five years from now, how will it perform five or ten years from now? *We know,* for we have a record of over 25 years of service on many Standards.

The history of electric cookery is so inextricably linked with the history of Standard that one cannot be told without completely telling the other. That is why we are proud of our product and its service to Standard users.

CHARLES A. PIERSON

Columbia No. 1485

Columbia was designed to fill the needs of the large home and still not occupy too much space. This range is just 45 inches left to right. It has two ovens, one is 18 x 19 x 14 inches, the other is 16 x 19 x 14 inches. The burners are recessed into the top and the bottom of the oven to give extra space, so the up and down

measurement 14 inches is in the clear. The ovens are all welded into one piece and then beautifully enameled with porcelain. The cool table top is large and commodious. The switches and controls are in the back splasher. The four surface burners may be either enclosed KALMAX or SPEED-HEET ebonized burners; no extra charge for either type burner. The Unit Cooker is extra. This range has a warmer and a roomy utensil drawer. The price is so low it will surprise you.

A Standard Franchise

When you have a Standard Franchise, you have access to the most complete line of electric cookery articles made by one company. Every domestic size, every heavy duty size including the new No. 818 and its companion cooking top and separate oven, water heaters in sizes from 6 to 120 gallons, hotplates, griddles, ovens, warmers, urns and urn heaters. You do not need to look elsewhere when you have a Standard Franchise. Particulars on request.

THE STANDARD ELECTRIC STOVE COMPANY

Toledo, Ohio, U. S. A. Dept. C

TWO-ELEMENT
SINGLE-DISK
Watthour
Meters
are

MODERN METERS

Sangamo Type L-2-S Two-Element, Single-Disk, Socket Mounting Meter

Sangamo Type L-2-A, Two-Element, Single-Disk Meter in "A" Base

For MODERN LOADS

Western Offices:
LOS ANGELES
326 Subway Term. Bldg.
SEATTLE
220 Ninth Ave. N.
PHOENIX
1318 W. Lynwood St.
SAN FRANCISCO
1061 Howard St.
DENVER
1526 Blake St.

SANGAMO ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS

Legislatures Reject Public Power Bills

The Idaho state senate, before adjourning last month, killed a measure which would have permitted creation of power districts on petition of 10 per cent of persons geographically affected, acquisition of sites or plants by purchase or condemnation, sale of power, levy of taxes and issuance of bonds by the districts.

The house rejected a measure which would have levied an excise tax on water stored for power. The law was aimed at the Washington Water Power Co., which would have had to pay 20 cents an acre foot for water stored in Coeur d'Alene lake for power purposes in Washington. Also defeated was a bill to raise the tax on electric energy from one-half to one mill.

HOUSE BILL 91, proposed in the Utah Legislature to broaden the powers of municipalities in acquiring and operating power systems, was killed last month by the state senate. Referring to a section of the bill, one Senator said that were it passed, private property in the state would not be worth the ground it stood on.

●

Kennett Power Disposal To Be Studied

Disposition of power from Kennett Dam, which definitely has been selected as the principal unit in California's Central Valleys Project, will be the goal of investigations authorized last month by the California Water Authority. Action followed an offer of the Pacific Gas & Electric Co. to buy all power developed at the site.

The company's offer will in no way affect prior rights of California municipalities and utility districts, according to Earl Lee Kelly, state director of public works. The Water Authority authorized an engineering study of power disposal to be undertaken both independently and in cooperation with company representatives.

●

San Francisco Seeks New Power Proposals

Secretary of Interior Ickes was disappointed, he announced, to learn that on March 9, San Francisco voters turned down by a 12,000 majority a proposed $50,000 revenue bond issue for establishment of a municipal distribution system.

His feeling became manifest six days later when he demanded "definite assurance" of San Francisco that the city, within 15 days, take steps to comply with provisions of the Raker Act*, as he interpreted it. Otherwise, he said, he would refer the matter to the Attorney General.

San Francisco's board of supervisors found themselves faced with many questions. If they didn't act, could the Attorney General impound the city's $2,000,000 annual revenue from the Pacific Gas & Electric Co., which distributes under an agency agreement? Could the bond issue carry if resubmitted to voters?

Feeling was that the city's revenue could not be impounded, that a court test of the Raker Act could do the city no harm. Possibility of an early resubmission dwindled when it was learned the city treasury did not contain the $40,000 needed for a special election.

●

San Diego Turns Thumbs Down On Municipal Ownership

A proposed amendment to the San Diego city charter, designed to pave the way to municipal ownership of utilities, was defeated 10,884 to 10,365 at an election held March 23. The election was unique in one particular—there was no organized opposition to the amendment through newspaper advertising, radio or printed material. Editorial comment in two of San Diego's three daily newspapers advocated adoption, as did city officials and "utility baiters."

Because the proposal was purely legislative and did not establish an issue either for or against public ownership the result indicated a lack of confidence on the part of voters in the ability of public officials to assume added responsibility and reluctance to place in the hand of a city council any tool designed to encourage municipal ownership.

●

EDISON ELECTRIC INSTITUTE will celebrate its 100th anniversary in Chicago, June 1 to 4, when thousands of representatives of the electrical industry will gather at convention headquarters in Palmer House. Five business sessions and a variety of entertainment are planned. Details will be mailed to members at an early date.

●

PRECEDING a possible revenue bond election, Oroville, Calif., will vote April 12, to decide whether a majority or two-thirds approval will be necessary to authorize such bonds. Oroville is served by Pacific Gas & Electric Co.

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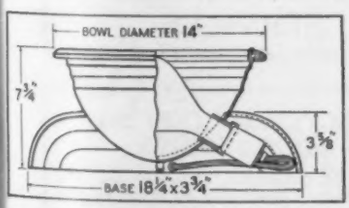
* The Raker Act, passed by Congress in 1913, gave San Francisco water and power rights in Yosemite National Park, with many restrictions. The provision in question is the first part of section six. It reads: "The grantee is prohibited from ever selling or letting to any corporation or individual, except a municipality or a municipal water district or irrigation district, the right to sell or sublet the water or the electric energy sold or given to it or him by the said grantee."

PRINT IN BINDING

FOR QUICK PROFITABLE SALES . . .

CURTIS
Portable Luminaires

Here is the "Homer" Luminaire, a number you can really afford to push. . . . With these Portables you walk into a lighting job, make your installation quickly and easily . . . and walk out with a profit. Curtis Portable Luminaires give your prospects modernized indirect lighting at low cost. These units plug in existing outlets for portable arrangements, or mount permanently on shelves or cabinets. Read these specifications . . . see the example to the right . . . then send the coupon below for full details.



LAMP: One 500-watt or one 300-watt inside frosted lamp.

MATERIAL: Base; Heavy gauge steel. Bowl; Lunax (Alzak) Aluminum.

FINISH: Exterior of bowl; Lustrous Aluminum with polished highlights. Diffuse Lunax reflecting surface. Base brightly Polished Nickel.

CATALOG DATA: Code name: "Homer." Catalog No. 41. This unit may be secured with color rings at slight extra cost. One mogul porcelain socket is concealed in base and burns lamp nearly horizontal. Wire and plug not included. Shield furnished to minimize the light splash when units are located close to the wall. Units are packed one to a carton. Immediate delivery.

CURTIS LIGHTING

New York CHICAGO Toronto

REPRESENTATIVES IN ALL PRINCIPAL CITIES

CURTIS LIGHTING, INC.
1123 W. Jackson Blvd.
Chicago, Illinois

Please send me the full story of your Portable "Homer."

NAME_____

ADDRESS_____

There's Profit In Private Telephones

Your customers that need quick interior communication —and practically all of them do—will find no finer private telephones than these handsome modern handsets, made by one of the oldest and largest manufacturers of public telephone exchange equipment.

Automatic Electric Intercom. Systems

are supplied in capacities of 2, 6, 10 and 11 stations, with wall or desk type telephones. Being easy to install, simple to operate and good to look at, they will find a ready market in your territory. Write for catalog and discounts.

[AUTOMATIC ELECTRIC intercom. systems are designed for private service. They cannot be connected with the public telephone system.]

American Automatic Electric Sales Company

1033 West Van Buren St., Chicago

Los Angeles Office: 555 S. Flower St.
San Francisco Office: 325 Ninth St.

Plans Near Completion For P.C.E.A. Convention

Four men of national prominence in the electrical industry will be on the program of the Pacific Coast Electrical Assn. when it holds its convention at Hotel Huntington in Pasadena, May 20 and 21, it is announced by Fred B. Lewis, president. C. W. Kellogg, president of Edison Electric Institute, will give one of the main addresses.

Dr. Phillips Thomas will be the principal speaker on the program of the Operating Economics Section, Thursday morning. Section chairman is A. W. Copley. Dr. Thomas, research engineer in the Westinghouse laboratories in Pittsburgh, will speak on "Ramblings in Research" and demonstrate phenomena of current interest to electrical investigators.

Thursday afternoon, devoted to lighting, will be sponsored by the Business Development Section under chairmanship of A. H. Nicoll. Two speakers have been secured from the Nela Park laboratories of the Incandescent Lamp Department of General Electric Co. H. Freeman Barnes, sales promotion manager, has chosen as his subject "Light Marches On." H. H. Magdsick, commercial lighting engineer, will speak on "New Means to Bigger Lighting Business." Both will demonstrate new equipment, including some that is not yet available for sale.

"A Wiring Clinic" is being arranged as an opportunity for all delegates interested in wiring to study the problem with the hope of initiating cooperative action. This, in the nature of a section meeting, will be given Thursday evening.

Great interest has been aroused in the proposed "Art Gallery," a collection of old photographs showing events of 20 years ago. William A. Cyr, associate editor of ELECTRICAL WEST, is in charge. Members having suitable photographs are urged to communicate with Cyr in San Francisco, or with Victor H. Hartley in Los Angeles.

Delegates will have an opportunity to see interesting laboratory novelties as well as devices illustrating modern electrical magic. This feature may include a celluloid model of the 200-in. telescope now being erected at Palomar, an automatic bean sorter, a photo-electric switch, a fluoroscope for testing oranges, a floating magnet, an oscillograph, an electronic welding timer, the "hear your own voice" device and a scale model of Boulder Dam.

A second exhibit will consist of charts depicting the use of electricity in modern manufacturing. Each chart will be devoted to a specific industry and will follow the assembly line plan.

Friday afternoon will be reserved for play with particular emphasis on golf. Three trophy cups will again be awarded. Optional amusement will be provided, as well as entertainment for ladies.

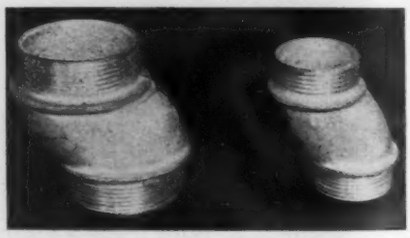
A new feature will be the "Customers Show," on Saturday. Industrial executives, plant engineers, city and county officials, school superintendents, architects and others will be invited. Principal items of the convention program will be repeated, under the direction of C. E. Houston, commercial manager of Southern California Edison Co.

At the Saturday luncheon, Byron C. Hanna, president of the Los Angeles Chamber of Commerce, will speak. Tentative plans contemplate a similar customers program in San Francisco, probably the week following.

American plan rates at Huntington Hotel will be $8 a day, $7 each for two in a room with bath. Reservations should be sent direct to the hotel, attention Glenn Greene. The tentative proposal is to have all delegates from the Bay region leave San Francisco on the Sunset Limited, May 19. This train will be met at Glendale by special buses.

A Real Time Saver!

HARTMAN UTILITY NIPPLE



● YOU save time with the Hartman offset nipple.* Its design permits mounting of switches and similar equipment where knockouts don't line up. Standard sizes ½, ¾, 1¼, 1½ and 2 in. Write today for full information.

*Patent applied for.

B. HARTMAN 168 Sunset St. Long Beach, Cal.

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ARTHUR R. KELLEY
CONSULTING ENGINEER

Reports and Valuations, Public Utility Industrial Properties

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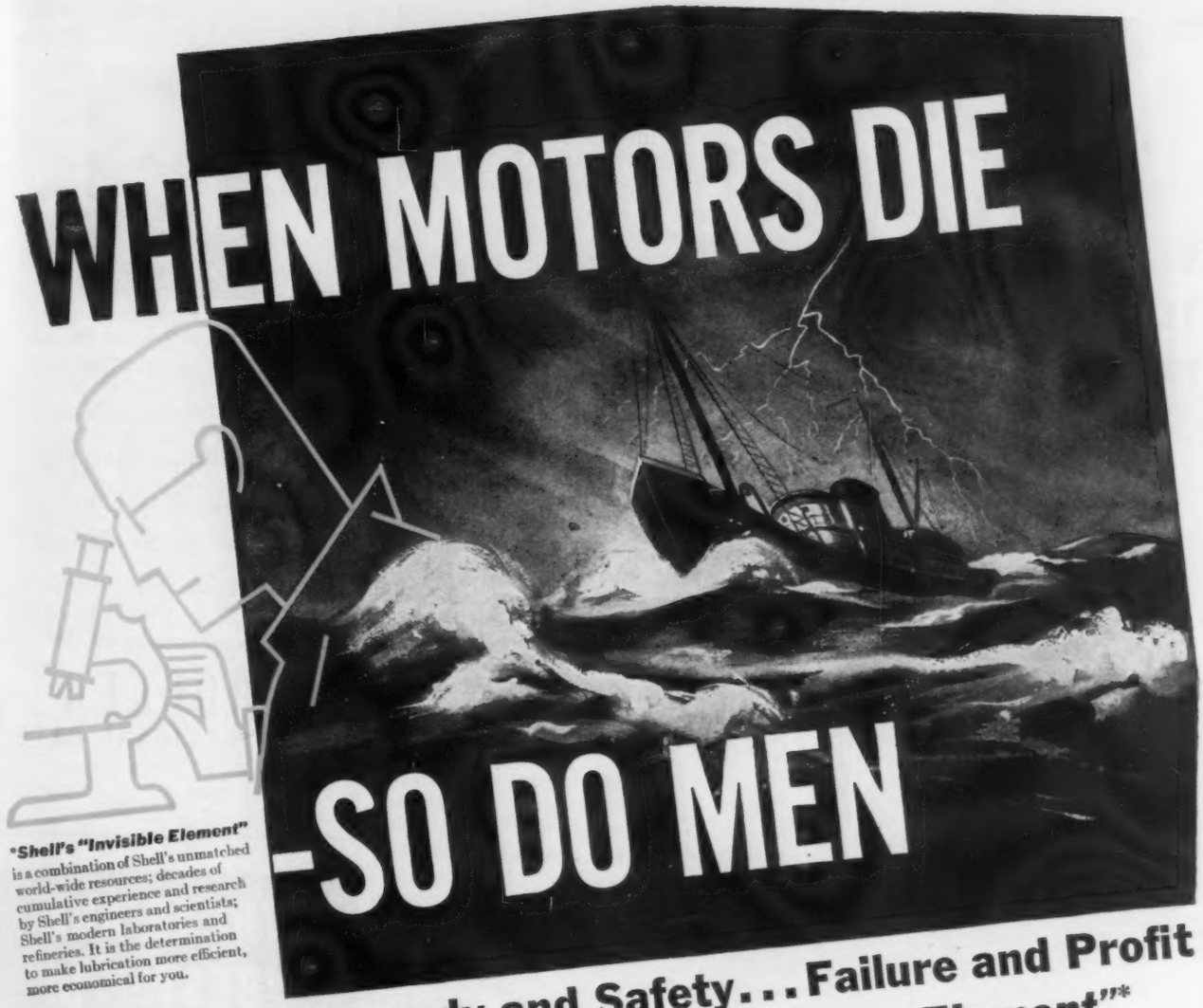
WHEN MOTORS DIE



-SO DO MEN

*Shell's "Invisible Element" is a combination of Shell's unmatched world-wide resources; decades of cumulative experience and research by Shell's engineers and scientists; Shell's modern laboratories and refineries. It is the determination to make lubrication more efficient, more economical for you.

Between Tragedy and Safety . . . Failure and Profit . . . stands Shell's "*Invisible Element*"*

Shell Oils in Action!

Captain Frederick B. Wrege, skipper of the *Effort III*, testifies to the outstanding performance of Shell Marine Argus Oil!

"For your information, I wish to state that my fishing boat, *Effort III*, is equipped with 180 H.P. Fairbanks-Morse Diesel Engines, and for quite some time I have been using Shell Marine Argus Oil 46 for the lubrication of this equipment.

"Upon examination of the engines, after six months of operation, the following interesting facts were observed: (1) No evidence of ring sticking. (2) Practically no carbon deposits present. (3) Absolutely no sludging of lubricant. (4) No cylinder, wrist-pin or crankpin wear.

"I further observed an agreeable reduction in oil consumption while using Shell Marine Argus Oil 46."

***Signed:* FREDERICK B. WREGE**

A TRAWLER smashes her way through mountainous seas, homeward bound. Below decks an engineer stands by a perfectly functioning Diesel, confident in her performance . . . she's lubricated with Shell products!

Wherever wheels must turn . . . in mills and mines and ships at sea . . . Shell engineers have set for themselves the task of developing a more perfect, more economical lubricant.

Into every gallon of Shell Lubricating Oil, every pound of Shell Grease, have gone the efforts of these men.

As a result, Shell offers a line of lubricants which is successfully meeting *thousands of industry's varied needs*. Preventing wear, conserving power . . . providing real savings in maintenance costs.

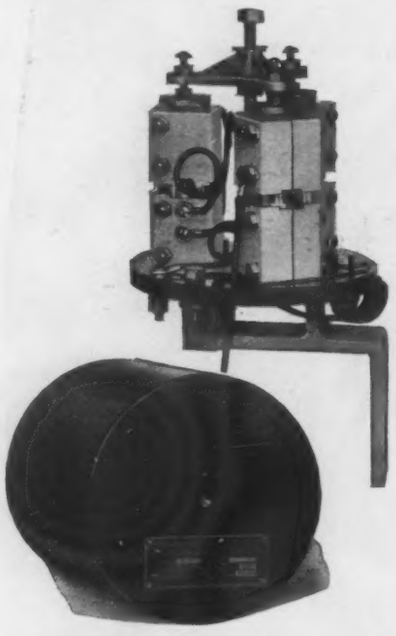
* * *

Do you face a particular lubrication problem which Shell might help you solve? A request addressed to Shell Industrial Lubricants Division, Shell Building, San Francisco; or Shell Building, St. Louis; or 50 West 50th St., New York, will bring a representative to your offices at no obligation to you.

SHELL **INDUSTRIAL LUBRICANTS**

Reliable

SERJDETOUR TELEPHONE PROTECTOR



Permits use of telephone circuits immediately after heavy surges on closely paralleling transmission lines.

The Serjdetour is a simple device with no moving parts, no auxiliary relays. It will carry a discharge of twenty-five amperes for ten minutes without becoming short circuited. As it may be used with twenty-five ampere fuses, it practically always handles inductive disturbances without fuses blowing—leaving telephone line clear as soon as power line switches have opened.

It will stand contacts with 66KV or more without blowing up and without allowing any hgh voltage to get past it.

Write for bulletin

Reliable ELECTRIC COMPANY
OVER 25 YEARS SERVICE TO THE UTILITIES
3145 CARROLL AVENUE CHICAGO ILLINOIS

Central Arizona Co. Schedules Big Program

Biggest construction program for the Central Arizona Light & Power Co. since 1929, involving expenditure in 1937 of $815,000 for new equipment and replacement, was announced last month by E. H. Coe, president. Principal item will be a $315,000 addition to the Buckeye steam plant west of Phoenix.

Other items include raising transmission line capacity between Avondale and Buckeye from 44,000 to 66,000 volts, installing a 3,000-kva. substation at Perryville, a 2,000-kva. substation in northwest Phoenix, spending $100,000 for extension and improvement of distribution lines, and rebuilding the Sycamore line connecting with the Arizona Power Co. at Perryville.

Seventy men are on the job at the steam plant, where installation of a 12,500-kw. auxiliary machine is scheduled for completion May 1, raising installed capacity to 27,500 kw.

●

Seattle Awards Bids, Calls for More

Contracts to furnish equipment for Seattle City Light's south substation, Fourth Ave. S. and Spokane St., which will handle power from the Diablo plant over the new Skagit transmission line, were awarded as follows:

To Westinghouse Electric & Mfg. Co., three 20,000-kva. transformers, $158,148; to Pacific Electric & Mfg. Corp., oil circuit breakers—one 230 kv., spare bushing, two 34.5 kv., 2,000 amp., and fourteen 34.5 kv., 600 amp., total $162,164; to General Electric Co., one 30,000-kva. synchronous condenser and one 230-kv. disconnecting switch, total $143,911; to Allis Chalmers Mfg. Co., two 15-kv. oil circuit breakers, less deduction for omitting one tank lifter, $15,372.

Seattle's Board of Public Works was to open bids April 1, on the construction of towers for Skagit transmission line No. 2, and for switchboards at the south receiving substation. Contracts were estimated to total $1,400,000. The 116-mile line from Newhalem to the substation at Fourth Ave. S. and Spokane St. will include 560 towers.

●

FEDERAL STUDY of hydro-electric possibilities at Cabinet Gorge on Clark Fork, Columbia River was approved last month by the House Committee on Irrigation and Reclamation, which reported favorably a bill introduced by Representative Hill, of Washington. A similar measure failed of passage last session. The bill was amended by omitting a proposed reclamation study of the Rathdrum Prairie area in Idaho. Not yet determined are the market potentialities for Clark Fork power.

The bulwark of a widow's estate is the experienced management that preserves it. ☆ ☆ Such a safeguard can be obtained through our Trust Service.

TRUST DEPARTMENT

CROCKER
FIRST NATIONAL BANK
of San Francisco

THERE ARE "BESTS" IN EVERY INDUSTRY

IN ELECTRICAL APPLIANCES IT'S

Sunbeam

★ Automatic MIXMASTER ★ Double-Automatic IRONMASTER ★ Silent AUTOMATIC TOASTER ★ COFFEEMASTER ★ WETPROOF HEATING PAD ★ MASTER CORD and PLUG SET ★ GLASS COFFEE MAKERS FANHEATER ★ FLAT TOASTER ★ Automatic CLOTHES SPRAYER.

Made and guaranteed by

CHICAGO FLEXIBLE SHAFT COMPANY
5600 West Roosevelt Road, Chicago, Ill.
316 Commercial St., Los Angeles, Cal.
921 11th Ave. N., Seattle, Wash.
47 YEARS MAKING QUALITY PRODUCTS

Northwest Engineering Group Will Meet

The annual meeting of the Engineering & Operation Section, Northwest Electric Light & Power Assn., will be held in Portland, April 21 to 24, according to announcement by J. Hellenthal, Puget Sound Power & Light Co., Seattle, section chairman.

Business sessions the first three days will be devoted to timely programs by the six committees of the section: production, transmission and distribution, utilization, accident prevention, power system engineering, and codes. The section will hold its banquet Friday night, April 23, and has scheduled inspection trips for Saturday, one of these to Bonneville Dam.

George M. Gadsby, association president, will attend, according to H. H. Schoolfield, who is in charge of arrangements.

●

B. C. Co. to Install 47,000-Hp. Turbine

A second 47,000-hp. turbo-generator is to be installed by the British Columbia Electric Railway Co. at its Ruskin power plant, on Stave River, 40 miles east of Vancouver, according to W. G. Murrin, president. He said plans call for employment of 150 men by the middle of this month. Completion is scheduled for Oct. 1, 1938.

A. Vilstrup, chief electrical engineer, and E. E. Carpenter, consulting engineer in charge of the construction department, will supervise the project, estimated to cost $1,500,000.

The development will raise the company's hydro capacity on the lower mainland to approximately 250,000 hp.

Contracts have been let for approximately $700,000. Dominion Engineering Works, furnished the first turbine, will install the second unit and 19-ft. butterfly valve. Generator, exciter and regulating equipment will be built and installed by Canadian Westinghouse Co. which also made the original installation. Included in the contracts are three 60-kv. transformers.

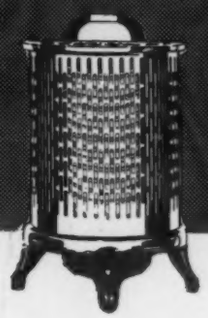
Contracts still to be let include supplying and installing the 19-ft. penstock, lining the tunnel with concrete and incidental work in the power house, the cost being approximately $200,000. The tunnel for the new unit was bored when the power house was built, so that the blasting would not damage the building.

No increase in lines will be necessary, but transformers and switching apparatus will be needed at the Vancouver receiving end.

The Ruskin plant was built in 1929 and 1930, provision for installation of four machines totalling 188,000 hp.

Now WESIX gives you even *more* profit!

. . . and the greatest advertising campaign in WESIX history



There's *more* money in Wesix this fall because we have tacked on more profit for you. You'll sell *more* Wesix heaters because we are going to give you the greatest advertising campaign ever put behind a portable electric heater! Seven select national magazines . . . radio . . . and newspapers will tell the Wesix story to millions. And what a story! Wesix is the only half-round, light aluminum heater that both radiates and circulates heat . . . quicker heat, safer heat, more economical heat. And Wesix is GUARANTEED 5 YEARS, approved by Good Housekeeping Institute, the Board of Fire Underwriters and the Electrical Testing Laboratories. No other portable electric heater offers so much to both purchaser and dealer. Cash in on Wesix popularity. Send today for complete details of this powerful, profit-building campaign.

They cashed in!

These outstanding retailers got in on WESIX profit in 1936

Marshall Field & Co. . Chicago
The J. L. Hudson Co. . Detroit
Davison-Paxon Co. . Atlanta
Alabama Power Co.
Georgia Power Co.
Commonwealth Edison Co. . . . . Chicago
Central Maine Power Co.
Clark & Mills Electric Co. . . . . Boston
Philadelphia Electric Co.
Kaufmann Dept. Store . . . . . Pittsburgh
John Wanamaker, Philadelphia
Ernst Hardware Co. . Seattle
The May Co. . . . Los Angeles
Famous-Barr Co. . . . St. Louis
Texas Power & Light Co.
New Orleans Public Service Inc.
Mississippi Power & Light Co.
Virginia Electric & Power Co.
Meier & Frank Co. . Portland, Ore. . . . . .
Tampa Electric Co.
Edison Electric Illuminating Co. of Boston . . . . . .

and thousands of others

SPECIAL! Extra discount with early orders

We're booking now for fall delivery and allowing you a substantial discount on your early orders. You can anticipate your Wesix requirements for next fall and boost your handsome profit margin even higher by taking advantage of the spring discount. Decide now to give your customers an electric heater that assures quick, safe heat and guarantees satisfaction. Remember this, too, you make more profit on the sale of ONE Wesix electric heater than you do on TEN of some small type heaters. Act now and add on this special spring discount.

SEND TODAY for this sales building plan book

Write today for this complete plan for selling more electric heaters next fall. This 16-page book tells how leading utilities and retailers have made Wesix work wonders for them. Entire advertising and merchandising program outlined and free mat service, literature, window displays etc., listed for easy ordering. *In writing for sales plan book please* NAME YOUR JOBBER

HELPING YOU SELL MORE WESIX HEATERS

WRITE DIRECT TO

WESIX *Electric* HEATER COMPANY

Dept. 177, Wesix Building • San Francisco, California

SIX RADIO STATIONS broadcast the stockholders meeting of the Southern California Edison Co. Ltd., March 19, when the present board of directors was re-elected to office. The Los Angeles meeting was carried to all listeners in territory served by the company.

●

CREWS ARE WORKING day and night to complete two underground 33,000-volt cables, being laid between Los Angeles' electric distributing station at 1504 Mateo St. and the recently acquired switching station at 1344 Lawrence St., a distance of 2,500 ft. This is the first step in a $660,000 program for the inter-connection of the city's system with that purchased from the Los Angeles Gas & Electric Corp.

●

SYSTEM OPERATIONS of the Washington Water Power Co., will be carried on from a new fifth floor to be added to the company's general office building in Spokane. Original plans to locate the operating department in the Post St. substation later were found to be impractical, according to J. E. E. Royer, vice-president and general manager. The addition will add 2,880 sq. ft. of floorspace at a cost of $11,000.

Rural Electrification

Formation of a tri-county cooperative with headquarters at Moscow, Idaho, was underway last month. Organized to supply power to 2,000 farmers, the project seeks a $620,000 loan. The cooperative would purchase at wholesale and distribute over 600 miles of its own lines.

The Inland Empire Rural Electrification Inc., St. John, Wash., non-profit, was incorporated last month at Olympia.

The Rural Electrification Administration last month announced loans and allottments as follows:

To the Surprise Valley Electrification Cooperative, Modoc, Calif., an additional $80,000; (previously allotted, $360,000). Also $60,000 to this project under designation Lake, Ore. (grand total, $500,000).

To the Clarks Fork Power Assn., Thompson Falls, Mont., a second allotment of $15,000; (total, $70,000).

To the San Carlos Irrigation and Drainage District, Florence, Ariz., a loan up to $145,000 to build 124 miles of line to serve 509 customers.

To the Wheatland Rural Electric Assn., Wheatland, Wyo., a loan up to $65,000 to build 62 miles of line to serve 220 customers.

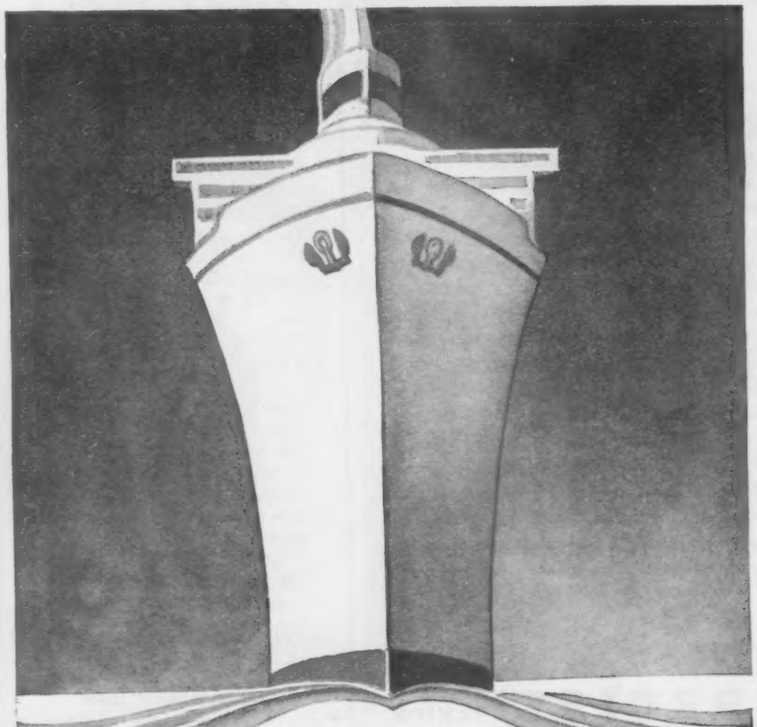
To the Orcas Electric Co., San Juan, Wash., an allotment of $87,000 to build a diesel plant and 70 miles of line to serve 200 customers.

●

REDUCTION of $53,000 in the annual electric rates of Victorville, Barstow, Palm Springs and other cities served by the Nevada-California Electric Corp., formerly the Southern Sierras Power Co., has become effective. Other communities affected are Big Pine, Bishop, Elsinore, Hemet, Riverside and Brawley.

●

A STEP TOWARD completion of its new substation at First Ave. and Kamloops St., Vancouver, was taken by the British Columbia Electric Railway Co., Ltd., last month with the award of contract at $84,500 for construction of the reinforced concrete building. With equipment, cost is expected to approximate $1,000,000.



UNDER WEIGH

AND BREAKING RECORDS

G-E Home Laundry Dealers are driving ahead in the greatest sales drive ever launched. Sales are breaking records!

The first part of the "Open Up" Campaign is over —but the second part starts soon. Come aboard for profits! Phone your G-E Distributor — now!

THE LONG LIFE ZONE SELLS G-E WASHERS

GENERAL ELECTRIC

WASHERS AND IRONERS

APPLIANCE AND MERCHANDISE DEPARTMENT, GENERAL ELECTRIC CO., BRIDGEPORT, CONN.

FOR

- *Lasting Economy*
- *Strength*
- *Safety*

USE

LOCUST PINS

Oak Brackets and Pole Steps

LOCUST PIN CO. FRONT ROYAL, VA.

Maydwell & Hartzell, Inc.

Los Angeles ★ San Francisco

THE $1,000,000 TWIN FALLS Extension Co. of Twin Falls, Idaho, has appealed to the federal district court a ruling of Robert W. Faris, Idaho state reclamation commissioner, which permitted the city of Buhl to take 800 sec.-ft. of water from Snake river for municipal power purposes. The company contended removal of the water "will seriously handicap" its developing the Bruneau irrigation project in Twin Falls, Elmore and Owyhee counties.

●

ALTHOUGH MESA FALLS were abandoned by the Montana Power Co. as not feasible for a power development, and although such a plant was turned down as a PWA project, the City of Idaho Falls, Idaho, proposes to construct a plant there as soon as $388,000 in WPA funds becomes available. The city expects to sell power to St. Anthony and Ashton.

●

ADVISABILITY of installing generating equipment at Fort Peck Dam, near Glasgow, Mont., was the subject of public hearings arranged in Miles City last month by the U. S. Army Engineers Corps for residents of southeastern Montana.

●

COEUR D'ALENE, IDAHO, is planning to start construction of a $300,000 municipal diesel power system soon. General obligation bonds were authorized three years ago. Construction will be without PWA assistance, in connection with which the Washington Water Power Co. previously obtained an injunction against the project.

●

ARIZONA EDISON CO. last month was ordered by the State Corporation Commission to reduce residential rates 21 per cent, commercial rates 20 per cent, in its Bisbee division.

●

HOME GAS & ELECTRIC CO., Greeley, Colo., through L. R. Storey, manager, announced a rate reduction of ½c per kw-hr., with a $1 minimum residential charge, effective April 1, in the rural area of which Greeley is the center.

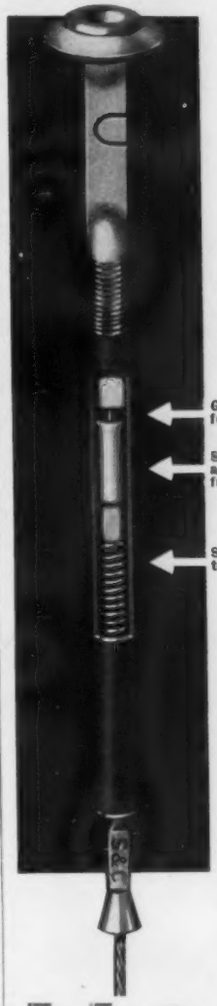
●

THE U. S. SUPREME COURT on Feb. 15 refused to review a lower court decision refusing to enjoin the construction of a hydroelectric power project on the All-American Canal in California by the Imperial Irrigation District. The suit was brought by the Nev-Cal Electric Securities Co., which charged that the District planned to serve the town of Brawley, Calif., and nearby territory, and that this was beyond the powers granted to the District as a public corporation.

SAVE OUTAGES DURING LIGHTNING SEASON

REG. U. S. PAT. OFF.

FUSE LINKS will do this



Actual records of several operating companies covering a period of six months including the lightning season, revealed amazing savings in time, money, and annoyance on loads protected by S & C Fuse Links.

These fuses were on distribution lines traversing wide areas, and fuse links from 1 to 10 amperes used.

Various makes of links were installed—but operations were vastly different . . . *Not one* S & C Link caused a circuit interruption because of improper blowing—not one unnecessary outage.

Investigation by company operating men showed that the metal sleeve around the fuse wire on 1 to 10 amp. S & C Links acts as a surge-gap and prevents the blowing of the fuse because of surges.

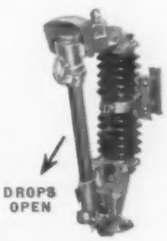
Stop Unnecessary Interruptions on YOUR Lines

Let S & C Fuse Links save outages for you, too. They are the only links that can be used in *any* make of cutout—they are strong, safely carried—have *no soldered* contacts.

Bulletin 218 is an interesting manual on the subject of protection. A copy is yours for the asking.

BETTER DISTRIBUTION CUTOUTS

The S & C line of Distribution Cutouts includes the Open and Enclosed Semafor types as well as the S & C Positect, Recloser type Cutouts and Rural Line Suspension Cutouts. New Bulletin 215-A contains latest information—ask for a copy.



SCHWEITZER & CONRAD, INC.

4435 RAVENSWOOD AVE., CHICAGO, ILL.

Manufactured in Canada by Powerlite Devices Ltd., Toronto

WESTERN REPRESENTATIVES

SAN FRANCISCO: Geo. E. Honn, 420 Market St. SEATTLE: T. S. Wood, 220 Ninth Street, N.

LOS ANGELES: Farnham & Cunningham, Edison Bldg. SALT LAKE CITY: Riter Engineering Co., Kearns Bldg.

ODDEST USE of an electric refrigerator is that by the Pan-American Airways on Wake Island. When construction crews were sent to build the Wake hotel and service depot for Pan-American clipper ships, every detail was planned carefully beforehand, and all equipment sent en masse, since it was a long way to "go back for the tools." However, a mistake was made. No tackle was provided to move a heavy piece of equipment into place. Yankee ingenuity solved the problem. The electric refrigerator, driven by a motor generator set, was speeded up. Ice cubes were made in prodigious quantity and laid in front of the heavy piece of equipment, which was jacked up onto them and slid to place. This story was told in San Francisco by Mr. Kennedy, official of Pan-American.

●

POWER USERS in Alturas, Calif, seeking an investigation of rates, were assured by M. V. Watson, general manager of the California Public Service Co., that his company will have an expert check present schedules with a view to possible adjustment.

●

RATES IN KINGMAN and Chloride, Ariz., served by the Citizens' Utility Co., have been reduced 10 to 15 per cent.

Realize Maximum Output from the Existing Water Supply

TAKEN on the average the cost of new hydraulic equipment may be from 3 to 5 per cent of total development costs, and yet the performance of these mechanical units determines, to a marked degree, the ultimate success of the project.

Regardless of contemplated developments, logic suggests a careful analysis of the older plants... to determine the possibilities for increased capacity from existing water supply. Many of the older plants have been modernized at comparatively small cost, resulting in increased output with greater reliability and safety. Ask Pelton engineers for specific proof.

THE PELTON WATER WHEEL COMPANY

HYDRAULIC ENGINEERS

120 Broadway 2929 Nineteenth St. Paschall Station
NEW YORK SAN FRANCISCO PHILADELPHIA

Pacific Coast Representatives for Baldwin Southwark Corporation, Cramp Brass & Iron Foundries Co. and Chapman Valve Eng. Co.

PELTON

Utah's Biggest Air Conditioning Job at Kress'

Unique air conditioning job is that which has just been sold to the Kress Co. in Salt Lake City by Carrier Engineering Co. The job was installed by the engineering department of the Kress Co. It is the largest air conditioning installation in the Utah territory, with an installed cooling capacity of 180 tons, cooling approximately 1,500,000 cu.ft. to 76 deg. The equipment consists of four 40-hp. Freon compressors, two 35-hp. and one 25-hp. blowers and a number of auxiliary pumps, etc., a total of 260 connected horsepower.

Unique feature is the duct system which locates the return grilles in the ceiling near the supply grilles. Thus the difference between the supply and return grilles is hard to distinguish. All fresh air intakes are constructed of copper. By using an evaporative type of condenser in place of a cooling tower the system consumes very little cooling water, which results in economy of operation on this score.

●

DENYING statements sent to the Seattle city council by Attorney L. Presely Gill, who represents City Light employees, Attorney George F. Vanderveer declared there was nothing political about the recent solicitation of City Light employes for contributions to promote the proposed merger of City Light with Puget Sound Power & Light Co. properties. Gill asked legislation to stop such practices among civil service workers, contending that City Light employees felt they had to donate to avoid reprisals and that such solicitation violated charter provisions against city employees taking part in political campaigns. In his answer, Vanderveer said Supt. J. D. Ross had ordered bulletins displayed to assure employees that contributions were not compulsory.

●

FIRST INSTALLATION in Portland of combination high intensity mercury vapor and incandescent lamps recently was completed in the Franz bakery, according to J. C. Plankinton, manager of the sales bureau, Northwestern Electric Co. The installation contains 21 units, each with a 250-watt mercury vapor lamp and 300 watts of Mazda lamps. Details were handled by U. K. Petersen, of the company.

●

GREAT FALLS, MONT., is seeking permission to spend $7,000 to employ consulting engineers to study a proposal to establish a city lighting and power plant. The town now is supplied by the Montana Power Co.

About People

Prof. Elihu Thomson Succumbs to Illness

Prof. Elihu Thomson, 83, one of the industry's greatest pioneers, and a founder of the General Electric Co., died at his home in Swampscott, Mass., March 13. He had been ill since January.

Famed for his technical work, he held more than 700 patents. He originated the resistance method of electric welding, developed the repulsion type induction motor, invented the magnetic blow-out principle used in lightning arresters and switches, the oil-cooled transformer, the constant-current transformer, and the modern process of commercially treating fused quartz.

Among his many inventions outside the electrical field is the centrifugal cream separator and the centrifuge.

Born in England, he came to America and in 1883 organized the Thomson-Houston Electric Co., which merged nine years later with the Edison General Electric Co., to form the G.E. Co. of today. At the time of his death Prof. Thomson was dean of the company's staff of scientists.

●

Fulford Leaves Puget Sound Co.

Changes in the commercial department of Puget Sound Power & Light Co., Seattle, were occasioned by the resignation of Tom D. Fulford, general sales manager, to take the position of general sales manager of the Virginia Electric & Power Co., Richmond.

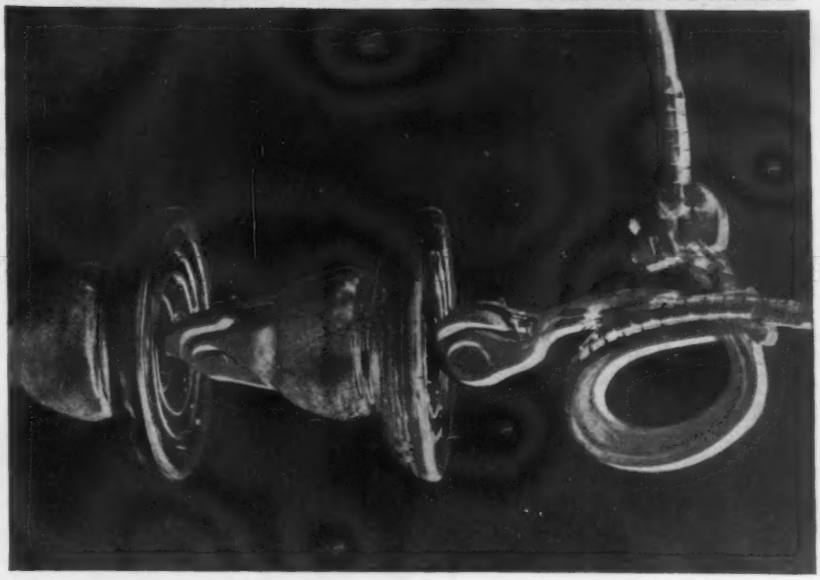
Pat Johnson, formerly Mr. Fulford's assistant, was advanced to general sales manager, and Cecil Webb, formerly assistant general sales manager of the Virginia Electric & Power Co. was appointed assistant general sales manager of the Puget Sound Co. in Seattle.

Mr. Fulford went to the Northwest in June 1933, from the position of division sales manager of the Virginia property in Norfolk. Under his management the sales department of the Puegt Sound Co. was revamped and an extensive program of business development was carried on in 1935 and 1936.

●

JOHN C. PAGE has been appointed commissioner of the U. S. Bureau of Reclamation. He continues in the post to which he was temporarily appointed upon the death of Dr. Elwood Mead. Mr. Page is well known throughout the West, particularly as chief administrative assistant in the construction of Boulder Dam.

BTC DROP FORGED HARDWARE



This photograph was taken in our studio in duplicate of a hook-up in actual use. Details will be supplied upon request.

Hardware Used

BTC Drop Forged, 7511
Snubbing Type Clamp.

* * *

BTC Drop Forged Caps.

* * *

For uniform metal
For added strength
For dependable lines
Specify Drop Forgings

If it's Hi-Line Hardware - it's in this Book

. . . Sold through Your Insulator Mfr. Only

The Brewer-Titchener Corp.
Cortland, New York

KLEIN CLIMBERS

Klein Climbers are made in standard and "light weight" styles, each the finest for its particular use.

Going up a sixty foot stick — working on wires high above the ground — a slip might be fatal — a spur that cut out a genuine hazard. The lineman throws his weight on his climbers with calm confidence — he knows they are Kleins. Klein Climbers, like all Klein tools, are the standard of quality in the electrical and public utility field.

DISTRIBUTED THROUGH JOBBERS

Foreign Distributor: International Standard Electric Corp., New York

The four pamphlets listed below will be sent without charge to anyone interested. Check the ones you want:

- ☐ Safety for the Pole Climber.
- ☐ Specifications on Linemen's Belts and Safety Straps.
- ☐ The Safety Factor on Linemen's Leather Goods.
- ☐ Pocket Tool Guide.

Mathias KLEIN & Sons
Established 1857 — Chicago, Ill. U.S.A.

3200 BELMONT AVENUE

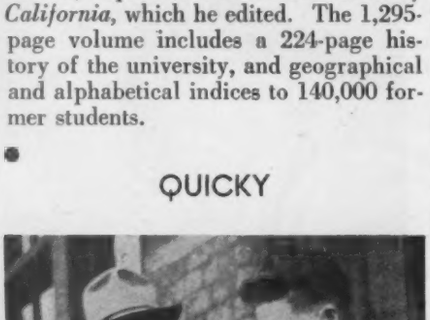
C. G. WILLS of Olympia has been appointed construction engineer at Ruby Dam, by the Seattle City Light Department.

●

ROBERT SIBLEY, former editor of the *Journal of Electricity*, predecessor to ELECTRICAL WEST, and now manager of the University of California Alumni Assn., last month mailed to more than 18,000 five-year members of his organization, copies of *The Golden Book of California*, which he edited. The 1,295-page volume includes a 224-page history of the university, and geographical and alphabetical indices to 140,000 former students.

●

QUICKY



Factory visits are almost overnight affairs these days, as demonstrated by William P. Swartz, west coast sales manager of Standard Electric Stove Co. He left the Electrical Age Exposition in Los Angeles on a Saturday night, flew East and was back on the job in Los Angeles Wednesday morning, away only two working days. As evidence that he actually was there, this snapshot of him saying goodbye to F. N. Cuthbert of the factory, was snapped

●

TOP RANKING SALESMEN of Westinghouse refrigerators were pictured recently in that company's *"Cold Selling Talk."* Among the number were Westerners Randall Warmack, Warmack Electric Co., Oroville, Calif.; Ross Gillian, Standard Furniture Co., San Diego; Clarence Stephenson, Stephenson Music and Electric Co., Pocatello, Idaho; R. J. Schneider, The May Co., Denver, Colo., and J. D. Matlock, Matlock Electric Supply Co., Globe, Ariz.

●

C. W. HARTENFELS has been appointed manager of the Cleveland district of the General Electric Appliance and Merchandise Department. From his former post as a distributor principal in San Francisco he takes a fine sales record. He also is remembered in Portland and Dallas.

Underground Transmission

Without Conduit

Note the air and moisture proof flexible coverings. Sealtite represents a distinct advance in parkway cable construction. It is more pliable than any other underground cable . . . and costs are considerably lower.

Write for booklet offering suggested uses and explaining long life.

SEALTITE

Parkway and Airport Cable with Maximum Flexibility by

PROVIDENCE

MAYDWELL & HARTZELL
INCORPORATED

ELECTRICAL ENGINEERS and MANUFACTURERS' REPRESENTATIVES

Los Angeles ★ San Francisco

YOU SAVE

With JEFFRIES

AIR COOLED TRANSFORMERS

● With a Jeffries Air Cooled Transformer money can be saved. The Air Cooled construction lengthens the life of the transformer and lowers repair costs. Plant expansion and extension can be made economically for a Jeffries Transformer provides the voltage change at the point desired without the need of long and expensive conduit runs. Besides a complete line of standard transformers, special designs and voltage furnished to order. Type S. S. Transformer 1 to 5 K. V. A. illustrated.

JEFFRIES TRANSFORMER COMPANY
5706 LONG BEACH AVE., LOS ANGELES

ARTHUR C INMAN, now assistant counsel for the Utah Power & Light Co., has been named chief counsel of the Idaho Power Co. He will succeed James L. Boone, who resigned to practice law in New York.

●

MURRAY J. WHITFIELD, general sales manager of Steel & Tubes, Inc., Cleveland, investigated Pacific Coast business conditions on a trip through this territory last month.

●

EMMETT BRITTON has been made dealer contact representative of the Pacific Gas & Electric Co. in the San Jose Division.

●

GEORGE K. COMSTOCK, president of Electrical Products Consolidated, returned to Seattle after a month's trip throughout the East. As president of the Seattle Chamber of Commerce, he was extensively entertained.

●

J. M. LOVATT, electrical engineer for more than 25 years for the British Columbia Electric Railway Co., died recently at a Vancouver hospital. He was 47.

●

VIVIAN KIRKPATRICK, insurance department, San Diego Consolidated Gas & Electric Co., was appointed chairman of the women's committee of that company for the year 1937. She succeeds Mary Hurley, records department.

●

EMPLOYEES' CREDIT union of the Washington Water Power Co. last month reelected R. T. Schatz as president. The union has 745 members, assets of $45,339.

●

FRITZ MEESKE, vice-president of Anaconda Wire and Cable Co., New York, last month visited the Pacific Coast and attended the wholesalers' annual meeting at Del Monte.

●

LOUISE ESPEY, for some time home economist for the Northwestern Electric Co., joined the Kelvinator Sales Corp. as home economist for Oregon, Washington, California, Utah and Idaho. Her place on Northwestern force has been taken by Miss Mildred Elrod, for the last 6 years domestic science instructor at Whitefish, Mont., although a graduate of Oregon State College.

●

C. A. KELLY, purchasing agent of the Nevada-California Power Co., will attend the Northwest conference of the Purchasing Agents Assn. in Portland, April 23 to 25. He is president of the national organization.

(Listed by Underwriters' Laboratories)

NEW 2-CIRCUIT

McGILL *Levolier* SWITCH No. 1020

A—4-point break. B—Heavy contact spring to give good electrical contact. C—Separate contact springs and bridges for each filament to prevent overloading.

ACTUAL SIZE

Here's the ideal switch for controlling the new double-filament 3-light lamps. First pull lights small filament. Second pull turns it off, lights larger filament. Third pull causes both to burn. Fourth pull turns both off. Made in 3 stem lengths, with plain lever or cord controls. Can also be used as a link switch.

ORDER FROM YOUR WHOLESALER

McGILL MANUFACTURING COMPANY

Electrical Specialties of Quality

VALPARAISO, IND.

Box No. 604

JUST OFF THE PRESS!

"Breezy Tales of Summer Sales"

Here Is a New Kind of Catalog—not only a description of Kisco Ventilating Equipment, but it is a well illustrated booklet, showing the many Kisco Fans in actual use. It suggests many new markets for Cooling and Ventilating sales.

Kisco Offers The Most Complete and Effective Line

Of Correct Ventilating Units—Exhausters—Air Movers—Coolers—Recirculators—with single and two speed motors.

Kisco Correct Ventilation Is Sold On Performance—Not Inches

Learn more of this profit producing line. Write Today for your copy of "Breezy Tales of Summer Sales" by Kisco.

SMALLCOMB ELECTRIC COMPANY

507 E. 7th St. Los Angeles, Calif.

KISCO COMPANY, INC.—ST. LOUIS, MO.

***YOU CAN MAKE QUICK PROFITS WITH FAST Selling* CLIFTON**

FRICTION TAPE
FRICTION CLOTH
AND SPLICING
COMPOUNDS

Represented by

GEO. E. HONN CO.
420 MARKET ST., SAN FRANCISCO

ASSOCIATED SALES ENGINEERS
912 EAST THIRD ST., LOS ANGELES

ALBERT S. KNIGHT CO.
3006 WESTERN AVE., SEATTLE

COMPLETE STOCKS CARRIED AT ALL 3 PACIFIC COAST POINTS

CLIFTON MFG. CO.
65 BROOKSIDE AVE., BOSTON, MASS.

From Range to Ranges

Not cowgirls, but range girls from the range country. Home service representatives of the Idaho Power Co., they spent a day at Westinghouse Institute, Mansfield, Ohio, inspected range, refrigerator and other appliance production lines. Reese Mills, manager of the range and water heater department, is the gent with the tough assignment of conducting the tour. The girls are (left to right) Misses Louise Sandemeyer, Helen Swanson, Helen Dodge, Leila Foster and Harriett Wallace

ARTHUR HALLORAN, chief of the electrical exhibit for the Golden Gate International Exposition, San Francsico, gave a description of the proposed electrical palace of the fair to the San Francisco Electrical Contractors Assn. He asked the cooperation of contractors in presenting an exhibit illustrating the good and bad practices in home and commercial wiring in collaboration with manufacturers of wiring products.

DR. FRANK CONRAD, chief engineer, Westinghouse Electric & Mfg. Co., will receive the Lamme Medal of the American Institute of Electrical Engineers at the annual convention this summer. He was cited for "his pioneering and basic developments in the fields of electric metering and protective systems."

H. E. SANDOVAL announces that he has severed his official connection with the Sandoval Sales Co. to devote his entire time to being factory representative in northern California and western Nevada for the Chicago Flexible Shaft Co., makers of Mixmasters and other appliance and specialty lines. His headquarters will be resumed at 557 Market St., from which the Sandoval Sales Co. moved after a fire a few months ago. Sandoval Sales Co. itself will move to new quarters at 1016 Howard St. and will be headed by John Sandoval as president and E. H. Harlow as general manager. It will continue as in the past in a distributing and wholesaling capacity, not only for the Mixmaster line but others as well.

HARRY LIPPERT, for the past 11 years with the Lindemann & Hoverson Co. in northern California, has joined the Norge division, Borg-Warner Corp. as range representative there, with headquarters at Leo J. Meyberg Co., San Francisco.

HARRY W. BROWN, for some years manager of the electric motor and pump department of Fairbanks-Morse Co. in San Francisco, has been made southern California branch manager of the company in Los Angeles. He succeeds V. E. Kittinger. E. C. McCord succeeds Mr. Brown in San Francisco.

The New **A.B. CHANCE CATALOG**
OF POLE LINE EQUIPMENT
is
ON THE PRESS

IF YOU BUY, USE OR SPECIFY
- ANCHORS
- GUYING FIXTURES
- LINE TOOLS
- CABLE RINGS
- CABLE CHAIRS

YOU WILL WANT A COPY
WRITE DEPT. D OR TEAR OUT AND MAIL THIS AD TODAY

Dept. D:
Put me in line to receive your new FREE catalog.

Name..... Company.....
Address..... City..... State.....

ABC INDUSTRIES
A·B·CHANCE CO· CENTRALIA MISSOURI

About the Trade

Hotpoint Appliances Move Through New Outlets

Hotpoint distribution in the eleven Western states was announced by Clyde Allen, Edison General Electric Appliance Co., San Francisco. For northern California a new distributor has been created by J. J. Whitehead Jr. for the sole purpose of distributing the Hotpoint major appliances. The new firm is known as the Electric Kitchen Appliance Co. located at 560 Ninth St., San Francisco. Associated with Mr. Whitehead in the metropolitan area are H. M. Thomas, formerly of H. R. Basford Co., and Herbert A. Cram, for many years a Hotpoint man; W. D. Evans, Jr., formerly of R.C.A. covering the coast territory from San Luis Obispo north; Ray E. Wadleigh, former division sales manager, P. G. & E. at Red Bluff, represents the company in the northern Sacramento Valley with headquarters at Marysville. Fred Prentice, formerly of George Eberhard Co., with Sacramento as headquarters, covers the upper San Joaquin and Sacramento region. Arthur Clapp, former Alaska manager of Dun & Bradstreet, Seattle, is comptroller and credit manager of the new firm.

The new distribution has a large warehouse, service department, office and display room. In the display room are three all-electric model kitchens representing three different standards.

The main kitchen contains a new six-burner range, dishwasher, built-in lighting, refrigerator, monel metal sink and metal cabinets. The second, for smaller homes, embodies a range and refrigerator, no dishwasher. A still smaller model with a 5-ft. refrigerator and smaller range is for moderate homes. Another section, across the room, shows appliances particularly applicable to apartment houses. A model laundry and a kitchen planning service, as well as a display of the Edison ranges for small restaurants, tea rooms, clubs, etc., also will be featured.

●

THE ILLUMINATING ENGINEERING SOCIETY has moved its general offices to the New York Life Insurance Bldg., 51 Madison Ave., New York, Room 2100.

●

PITTSBURGH - CORNING CORP., to be formed by Corning Glass Works and Pittsburgh Plate Glass Co., will manufacture and distribute glass to the building trades. Other fields in which Pittsburgh and Corning are active are in no way affected.

Moved or Modernized

Western dealers who have established themselves in new or improved quarters recently include:

BINGHAM RADIO & ELECTRIC CO., Pico and Montebello stores consolidated in one new, modern location at 506 Whittier Blvd., Montebello, Calif. Operated by H. J. Bingham.

●

S. P. LARSEN, southwestern sales engineer for Hubbard & Co., to offices at 448 S. Hill St., Room 706, Los Angeles.

●

HUME & RUMBLE, LTD., 510 W. Hastings St., Vancouver, B. C., to 313 Water St. The Water street building was purchased by the company recently. Alterations to exceed $7,000.

●

SODEN ELECTRIC CO., Twin Falls, Idaho, remodeled and relighted in anticipation of improved spring business. John Soden is owner, manager.

●

SALINAS ELECTRIC WORKS, directly across the main street of Salinas, Calif. W. L. Evans and son are proprietors.

●

W. E. KIRK, representing the W. W. Kirk Co. of Los Angeles, to 23 Main St., San Francisco. The firm represents Delta-Star Electric Co., Standard Transformer Co. and others.

●

EDISON GENERAL ELECTRIC APPLIANCE CO., Inc., in San Francisco to 560 Ninth St., telephone HEmlock 8080.

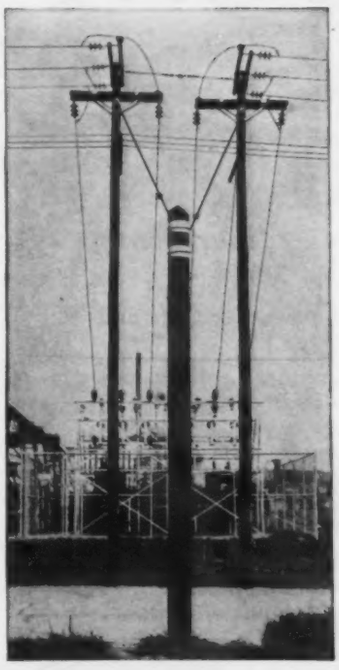
New nut housing. Locks Anchor firmly on rod. Rod cannot slip thru Anchor when being installed.

EVERSTICK ANCHORS...

Engineers appreciate Everstick features which assure safety, long life and ease of installation in any soil condition. A complete line of 3 types of expanding Anchors and rigid types of Cone Anchors. All sizes and holding capacities. Write for Everstick literature including new folder on Rural Electrification Lines.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

Crapo GALVANIZED PRODUCTS



Specified for Most Important Jobs

Crapo Galvanized Steel Strand has earned its reputation for longer life and lower maintenance cost by outstanding performances in actual service over a period of years.

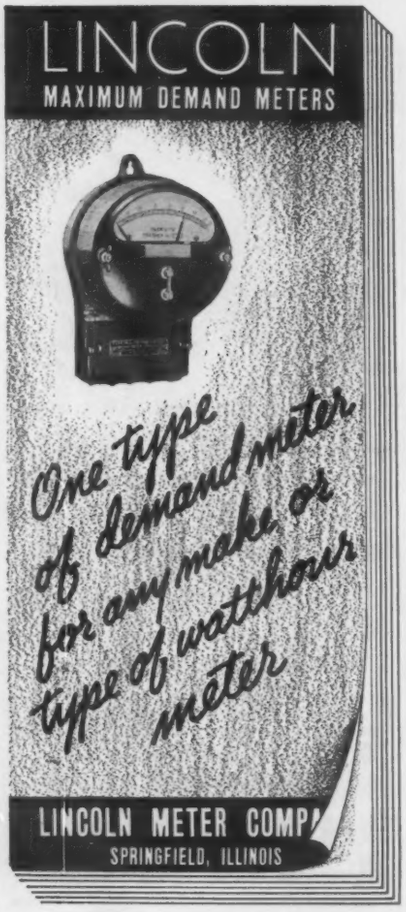
It constantly is being specified for the most important construction jobs because of its ability to more than meet every requirement for strength, ductility and resistance to corrosion.

Crapo Galvanized Steel Strand and Wire is available in all standard grades and sizes.

Indiana Steel & Wire Company
Muncie, Indiana

(Left) New lines erected by Department of Water and Power, City of Los Angeles, and guyed with *Crapo* Galvanized Steel Strand.

Steel Strand
• • •
Telephone and Telegraph Wire


LINCOLN
MAXIMUM DEMAND METERS
One type of demand meter for any make or type of watthour meter
LINCOLN METER COMP
SPRINGFIELD, ILLINOIS

H. H. NEWTON, sales manager of Woolwine Electric Range Co., Los Angeles, has announced the C. H. Carter Co., Sacramento, as distributor for Sacramento Valley. Production volume, Newton said, has been increased from 800 to 1,000 ranges from March to April to meet demands.

●

ARTHUR J. BEACOM & CO., at the Los Angeles Furniture Mart, have established a branch office and display room at 718 Mission St., San Francisco, where a complete line of Nesco merchandise will be shown.

●

THE COMMERCIAL ELECTRIC CORP., LTD., has incorporated in Victoria, B. C., with offices 825 W. Hastings St. Capitalization is set at $250,000.

●

GENERAL ELECTRIC Air Conditioning in northern California is now being handled by a separate distributing organization headed by Frank Edwards, formerly G. E. distributor in Salt Lake City. New quarters will be established soon at 930 Van Ness Ave., San Francisco.

●

THE NELSON ELECTRIC CO. has opened at Nelson, B. C., to engage in contracting, while carrying a full line of appliances in its retail store.

HEMINGRAY
Glass
INSULATORS

for primary and secondary insulation service and rural line needs.

Brass-bushed for great strength, perfect threads and full protection against pin expansion.

Hemingray provides many advantages: greater mechanical strength . . . sustained dielectric strength . . . unaffected by sudden temperature changes . . . withstands maximum insulator pin expansion . . . never ages or deteriorates . . . all surfaces impervious to moisture . . . tougher—withstands rough handling . . . clear and flawless for easy inspection.

Available in all styles . . . clear or brown glass . . . ratings up to 15,000 volts. Write for samples.
Owens-Illinois Glass Company . . . Muncie, Indiana.

Trade Literature

A postcard to the manufacturer or to ELECTRICAL WEST, 883 Mission St., San Francisco, will bring you any of these useful and informative publications.

TREATED PAPERS, Fabrics and Tapes, Catalog 65-040, an aid to the selection of proper insulation; includes characteristics, applications and list prices. Westinghouse Technical Press Service.

●

ELECTRICAL CONDUCTORS for circuits in buildings; includes descriptions of products and tables useful in wiring calculations. General Cable Corp.

●

DISTRIBUTION CAPACITORS, pole type, a discussion of principles and applications, with formulas and sample calculations. General Electric Co.

●

POWER, illustrations of hydro turbines, both large and small, for use with various heads, loads and physical conditions. S. Morgan Smith Co.

●

SYCHRONOUS MOTORS, coupled and engine types, illustrates construction and applications. Allis-Chalmers Mfg. Co.

●

RURAL ELECTRIFICATION MANUAL, diagrams accepted types of light overhead construction for rural lines. Locke Insulator Co.

●

MICARTA, industrial uses, lists mechanical and electrical properties, standard forms available, specific applications. Westinghouse Technical Press Service.

●

MANUAL OF FACTORY LIGHTING PRACTICE, discusses 30 common lighting problems, gives recommendations, installation diagrams, equipment specifications. Benjamin Electric Mfg. Co.

●

PANORAMA OF LUBRICATION, edited for engineers and others whose interest in the subject demands simplicity; includes color diagrams, photographs, a variety of general information; in three parts: No. 1, lubrication fundamentals; No. 2, friction type bearings; No. 3, motor oil. Shell Petroleum Corp.

●

LIGHTNING ARRESTERS, for distribution circuits, gives major considerations in planning for protection, discusses characteristics and applications. General Electric Co.

●

GOODS THAT ARE WELL SEEN ARE WELL SOLD, lighting methods for all types of stores. The Holophane Co., Inc.

●

WATTHOUR METERS, Catalog 42-215, polyphase meters for home service; includes pictures, wiring diagrams, performance characteristics, applications. Westinghouse Technical Press Service.

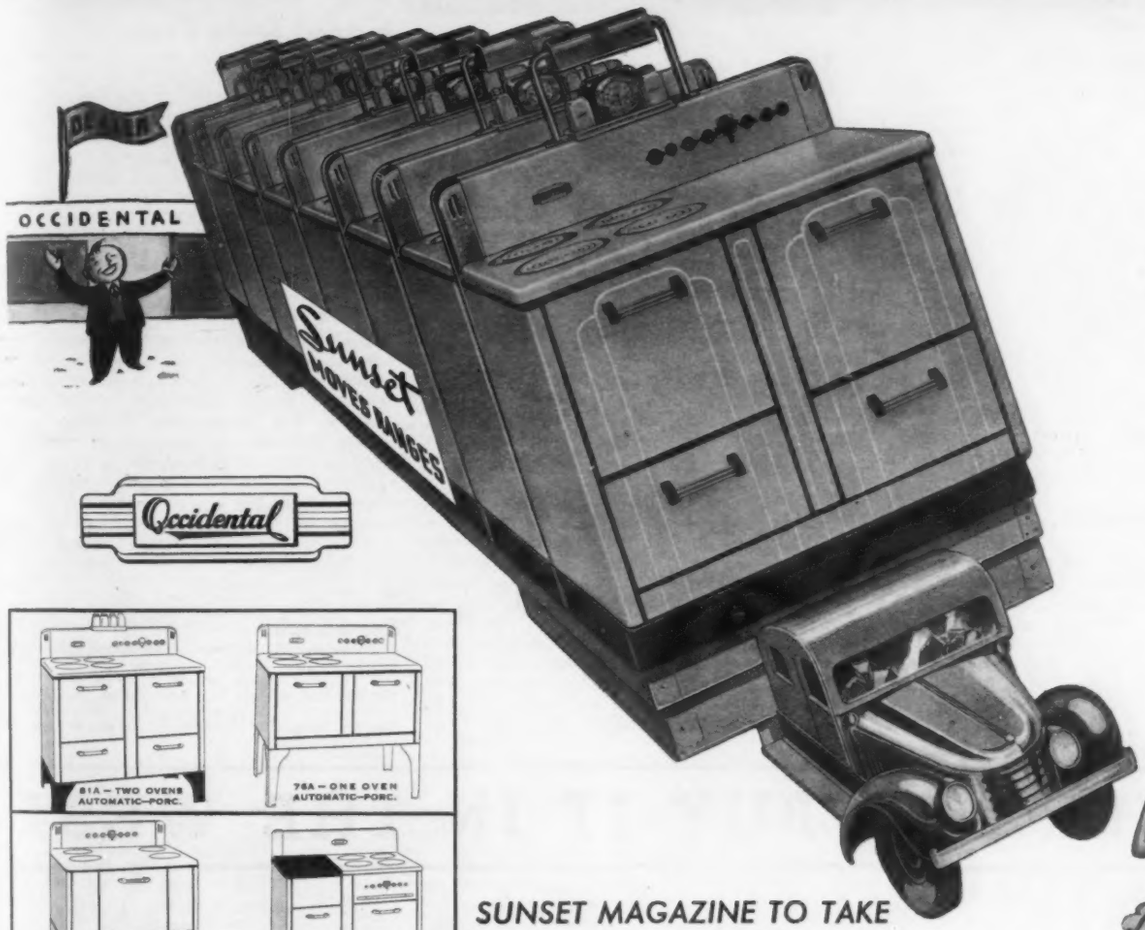
●

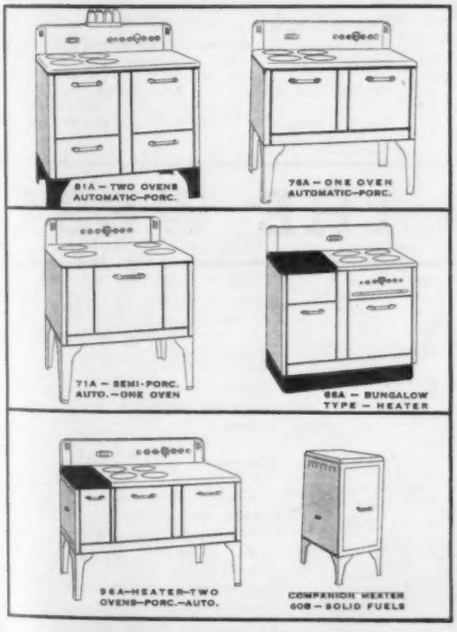
AUTOMATIC FEEDER VOLTAGE REGULATOR, Bulletin 1170B; engineering information, purpose, construction, diagrams and pictures of installations. The Allis-Chalmers Mfg. Co.

●

AERIAL CABLE, a treatise on power cable, covers applications and advantages, selection of conductor, insulation and finish, accessories, many tables. General Electric Co.

STREAMLINED SALES CAMPAIGN FOR NEW OCCIDENTAL ELECTRIC RANGES BREAKS MAY 1!




81A — TWO OVENS AUTOMATIC—PORC.
78A — ONE OVEN AUTOMATIC—PORC.
71A — SEMI-PORC. AUTO.—ONE OVEN
66A — BUNGALOW TYPE — HEATER
56A—HEATER-TWO OVENS—PORC.—AUTO.
COMPANION HEATER 60B — SOLID FUELS

THESE FACTS MEAN BUSINESS

◆ The West is the Nation's best market for electric ranges! ◆ More than 50,000 electric ranges were bought by Western families last year, 60% through utility companies, 40% through independent dealers; quotas for this year aggregate 60,000! ◆ In the seven Western states, 8.6 of every 10 homes are prospects for electric ranges! ◆ One of every 10 range owners in your territory will buy a new range during the year 1937! ◆ 100% effective coverage of all your prospects is assured by the Streamlined Sales Campaign for new Occidental electric ranges!

SUNSET MAGAZINE TO TAKE OCCIDENTAL STORY INTO QUALITY HOMES OF WEST!

WITH A ROAR that will be heard in every city and hamlet of the seven Western States, the 1937 consumer sales campaign for new Occidental electric ranges will get under way on, or about, May 1st when the May issue of Sunset Magazine reaches the homes of its more than 200,000 subscribers! In this issue of Sunset will appear the first of a series of crisp, modern advertisements for Occidental—one phase of a complete sales program that is streamlined for fast, efficient, and economical selling! Chief sales-motivator, however, will be the range itself. Each of the six models has more features, price for price, than any comparable make. Sound basic construction is assured by Steiger & Kerr's 68 years of manufacturing experience! Make the first move toward a record-breaking year today. Write us for details. Steiger & Kerr Stove & Foundry Co., 2201 Folsom St., S.F.

New Products

Ignitron Seam Welder

A new ignitron seam welder control utilizing ignitron tubes times power impulses in terms of a definite number of power cycles. Among its features is an inductive timer, consisting of a synchronous-driven disc rotating once per second and containing 120 holes, each corresponding to a half cycle of welding current. Steel pins are plugged into the holes according to the timing desired. The new control is simple, durable, and the timing is precise. Its use greatly improves the quality of welds for even very light gauge steels. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

●

Pullout Troughing Switch

Two new 30-amp. entrance devices with accessible load-side fuses are particularly adapted for apartment house installations. Catalog 92 is a two-pole switch and catalog 94 has three poles, both units being provided with solid neutral method of grounding.

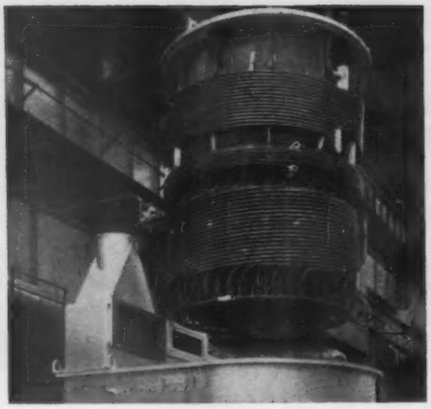
Switching action is obtained by merely opening and closing the cover, on the inside of which are mounted the switch blades. The main cover acts in the capacity of a "dead front" plate protecting the operator from accidental contact with live parts.

These new devices are designed to facilitate close banking, the endwalls being removable. By using special coupling straps, two or more switches can be connected to form one continuous trough, in which all wiring may be accomplished with maximum efficiency and ease. Colt-Noark Division, Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

●

Primer for Chromium

Where colors are desired on corrosive-resistant metals, such as chromium or others to the surface of which lacquer or paint will not adhere, a new primer is available. Marketed under the trade name of Chroprime, the primer can be placed on the object by dipping or spraying after which it is baked. the surface thus formed taking any kind of lacquer enamel readily. Maas & Waldstein, Newark, N. J.



●

Mercury Vapor Steam Unit

A small capacity mercury vapor steam unit for the generation of electric power and steam by means of the mercury boiler, mercury turbine, condenser boiler, and steam turbine cycle has been built by the General Electric Co. The mercury turbine is rated 1,000 kw. and in addition supplies the heat for generation of 12,500 lb. of steam per hour in the condenser boiler at 185 lb. gage and 160 deg. super heat. The boiler is of the floor circulation type, all the heating tubes being filled with liquid mercury and all of the vapor formed in a separate chamber remote from the combustion space. Pressure in the heating tubes is approximately 200 lb. per sq.in. General Electric Co., Schenectady, N. Y.

●

Vibration Eliminator

A new type of supports for heavy equipment, known under the tradename of Vibro-Insulators, is now available for application on mechanical equipment to absorb shock, vibration and to reduce noise. The new insulators are designed to carry loads in shear instead of compression which design is said to increase the sensitivity to movement many times. Construction of the eliminator consists of rubber bonded to metal. B. F. Goodrich Co., Akron, Ohio.

Time Delay Relay

In a newly designed motor driven time delay relay, time ranges start with a maximum of 35 seconds and extend up to 42 and 63 minutes. Differential gearing eliminates the use of troublesome clutches and a magnetically operated brake has been designed for the differential gear train. A standard midget relay built into the device, provides various load contact combinations including double pole, double throw. The relay is designed for 110 and 220 volt A. C. operation, and is immediately recycling. Quick make and break contacts are furnished with all contact combinations. Bulletin 362 gives complete description, contact data, dimensions and prices. Ward Leonard Electric Co., Mt. Vernon, N. Y.

●

Improved Service Elevator

Allis-Chalmers announces a new continuous moving-step type service elevator for convenient interfloor travel in multi-storied buildings or plants such as flour mills, grain elevators, garages, power plants, etc. It is powered through a gearmotor direct connected to the elevator head pulley and provided with a magnetic brake and safety control. Ease of installation is a feature of the new design. Allis-Chalmers Manufacturing Co., Milwaukee, Wis.

●

Non-Bouncing Relay Contact

Said to be a thoroughly practical non-bouncing contact which permits the full realization of ultra high speed relay capability is a new design announced by the General Electric Co. It provides positive contact closing and reduces maintenance required to keep contacts in dependable working condition. It consists of a simple self-contained unit, utilizing the kinetic energy of a moving member which energy is dissipated elsewhere than in the resilient contact. General Electric Co., Schenectady, N. Y.

●

Phonograph

Phonette—To convert radio into phonograph combination. Walnut cabinet. Constant speed, self starting motor, crystal pick-up, with volume control and switch for installation on radio for changeover. Either a.c. or d.c. Magnavox Co., Electro Acoustics Products Co., Fort Wayne, Ind.

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Graybar Elec. Co., Inc.
Kelvinator Corp.
Norge Division, Borg-Warner Corp.

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Weston Elec. Instr. Corp.

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Everstick Anchor Co.
Hubbard & Co.
James R. Kearney Corp.
W. N. Matthews Corp.

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A. B. Chance Co.
General Elec. Co.
Hubbard & Co.
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General Elec. Co.
General Elec. Supply Corp.
Graybar Elec. Co., Inc.
Kelvinator Division
Leonard Division
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National Enameling & Stamping Co.
Norge Division
Standard Elec. Stove Co.
The Silex Co.
Thermador Elec'l Mfg. Co.
Wesix Elec. Heater Co.
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General Elec. Co.
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Electric Material Co.
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I-T-E Circuit Breaker Co.
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Sangamo Elec. Co.
Westinghouse Elec. & Mfg. Co.

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Delta-Star Electric Co.
Electric Material Co.
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Pacific Elec. Mfg. Corp.
Roller-Smith Co.
Westinghouse Elec. & Mfg. Co.

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American Steel & Wire Co.
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Crescent Ins. Wire & Cable Co.
Crucible Steel Co. of America
General Cable Corp.
General Elec. Co.
Graybar Elec. Co., Inc.
Indiana Steel & Wire Co.
Maydwell & Hartzell, Inc.
National Elec. Products Corp.
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Okonite-Callender Cable Co.
Providence Insulated Wire Co.
Rockbestos Products Corp.
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United States Steel Corp.
Westinghouse Elec. & Mfg. Co.

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Carbon Products
National Carbon Co., Inc.

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Square D Co., Inc.

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Jeffries Transformer Co.

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Reflector & Illuminating Co.
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Kelvinator Corp.
Leonard Refrigerator Co.
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Maydwell & Hartzell, Inc.
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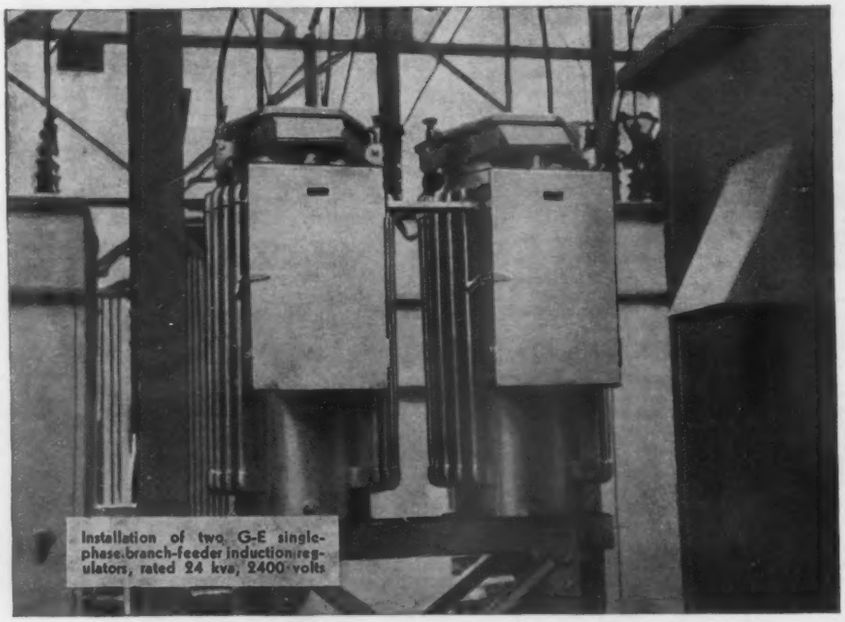

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350-133C

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Now it is leading in the promotion of better wiring as a foundation for a more completely electrified West. The fundamental basis of electrifying a home, a city, a state, or other unit is GOOD WIRING.

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This is not "wishful thinking," but fact. We know because this bureau alone distributed several thousand pieces of literature on wiring last year to people in the west who signified their interest by requesting it. Many have come to us for guidance in making their plans for new homes or rewiring old ones.

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PACIFIC COAST ELECTRICAL BUREAU

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